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THE

POPULAR ENCYCLOPEDIA;

BEING A GENERAL DICTIONARY OF

ARTS, SCIENCES, LITERATURE, BIOGRAPHY, HISTORY,

AND

POLITICAL ECONOMY.

REPRINTED FROM THE AMERICAN EDITION OF THE "CONVERSATIONS LEXICON."

WITH CORRECTIONS AND ADDITIONS,

SO AS TO RENDER IT SUITABLE TO THIS COUNTRY, AND BRING IT DOWN TO THE PRESENT TIME.

WITH

DISSERTATIONS

ON THE RISE AND PROGRESS OF LITERATURE,
BY SIR D. K. SANDFORD, A.M. OXON., D.C.L.

ON THE PROGRESS OF SCIENCE,
BY THOMAS THOMSON, M.D., F.R.S.L. & E., &c. &c.

AND

ON THE PROGRESS OF THE FINE ARTS,
BY ALLAN CUNNINGHAM, ESQ.

VOLUME V.—PART I.

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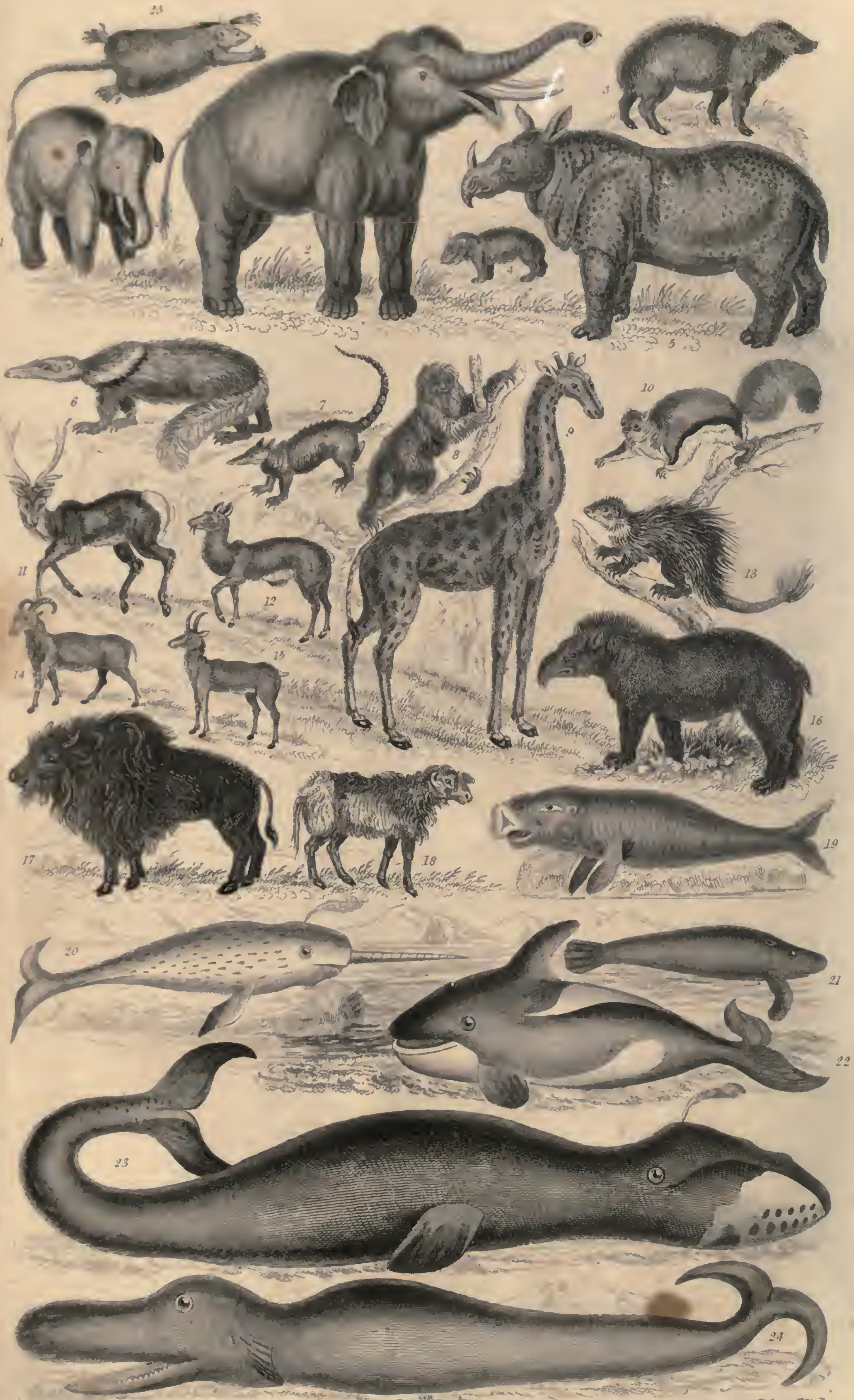

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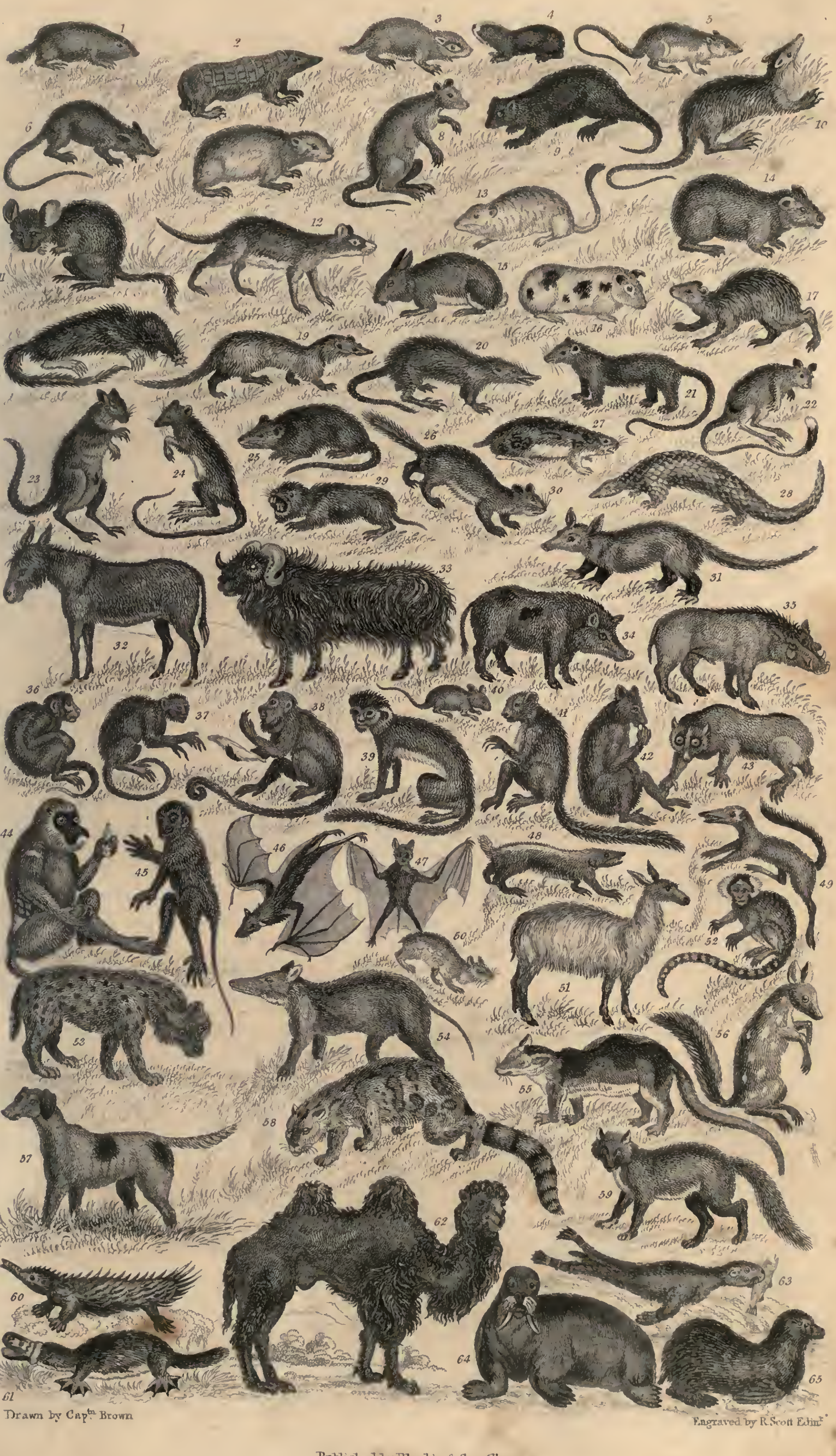

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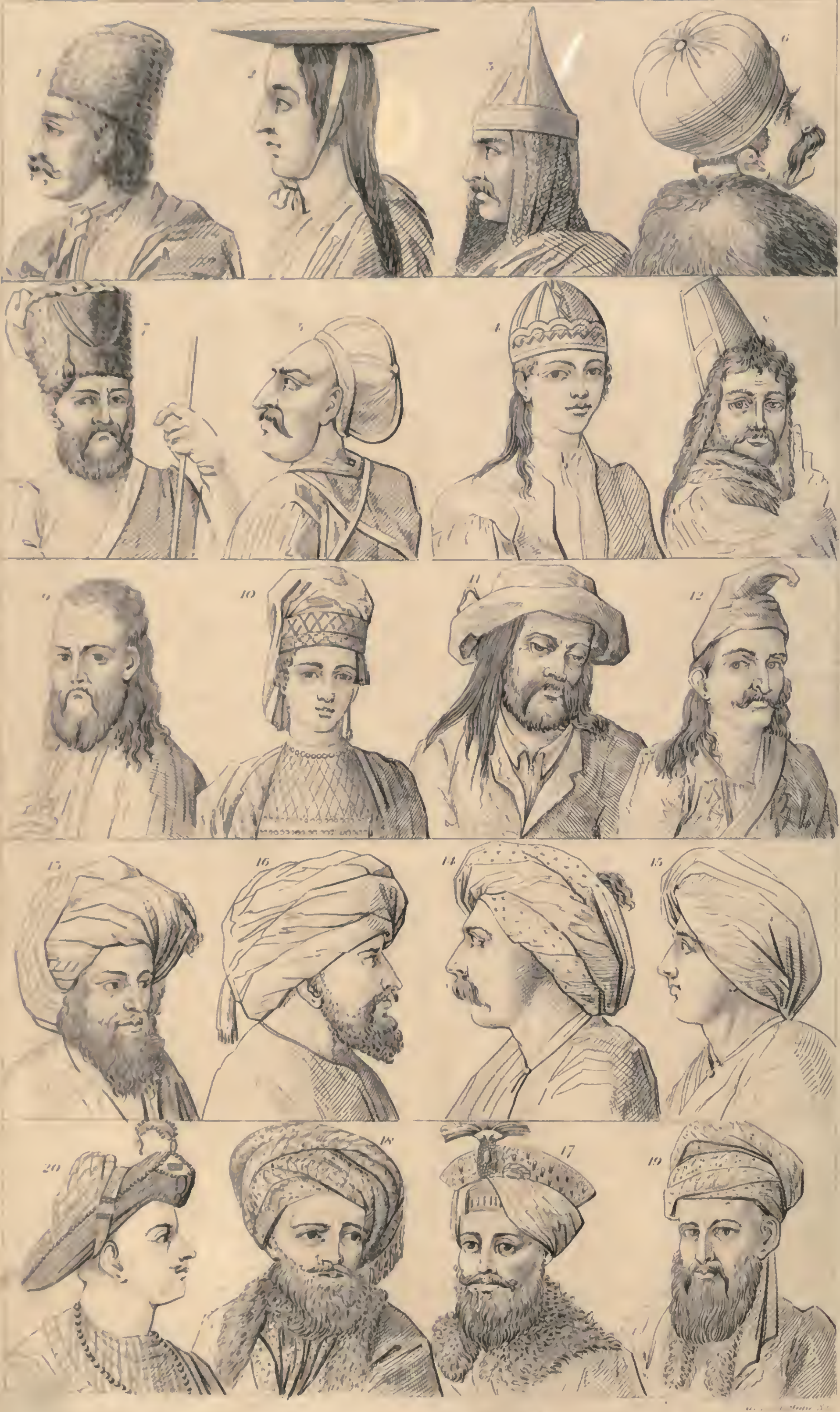
MAN

XLVII PLATE LXI



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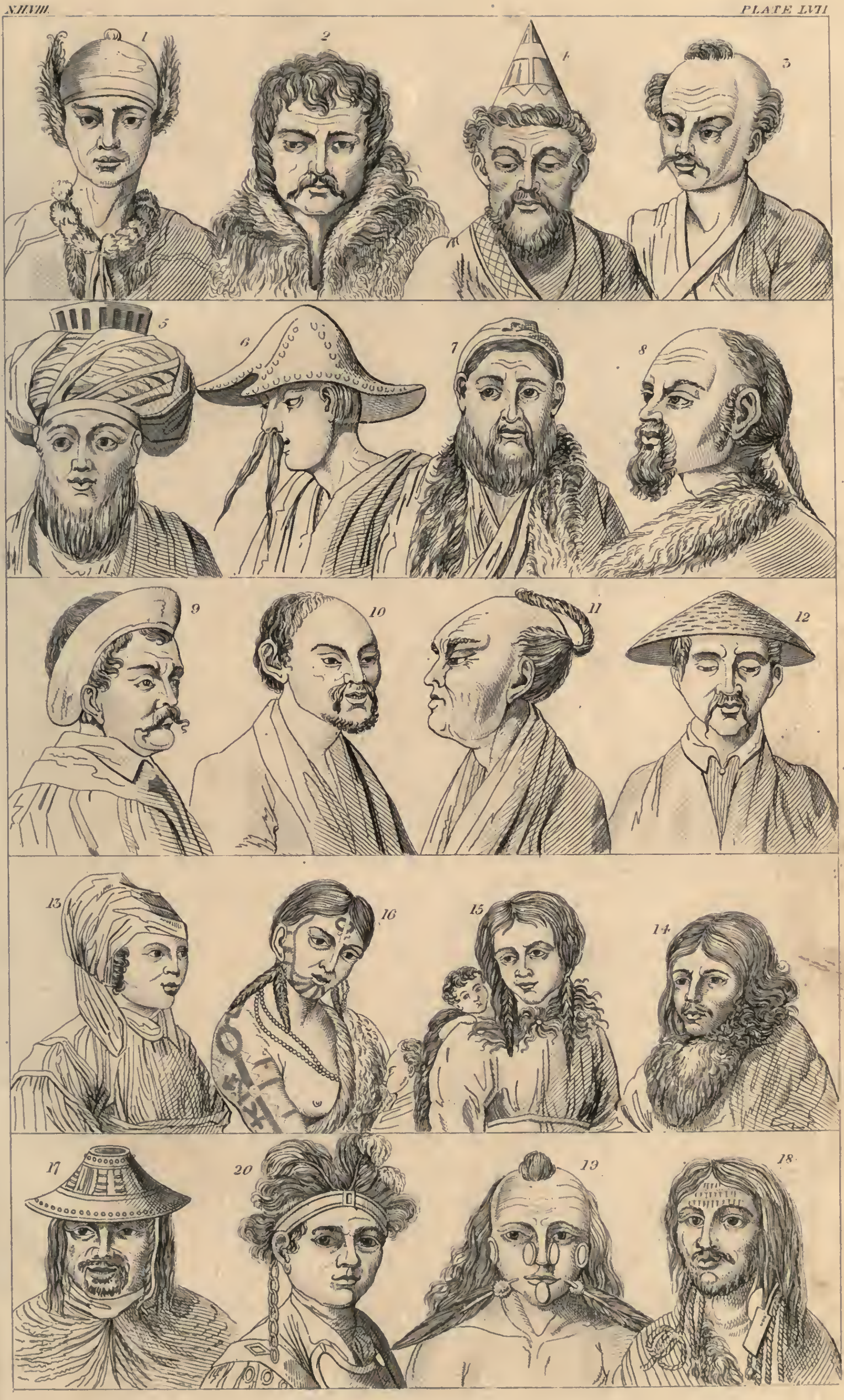

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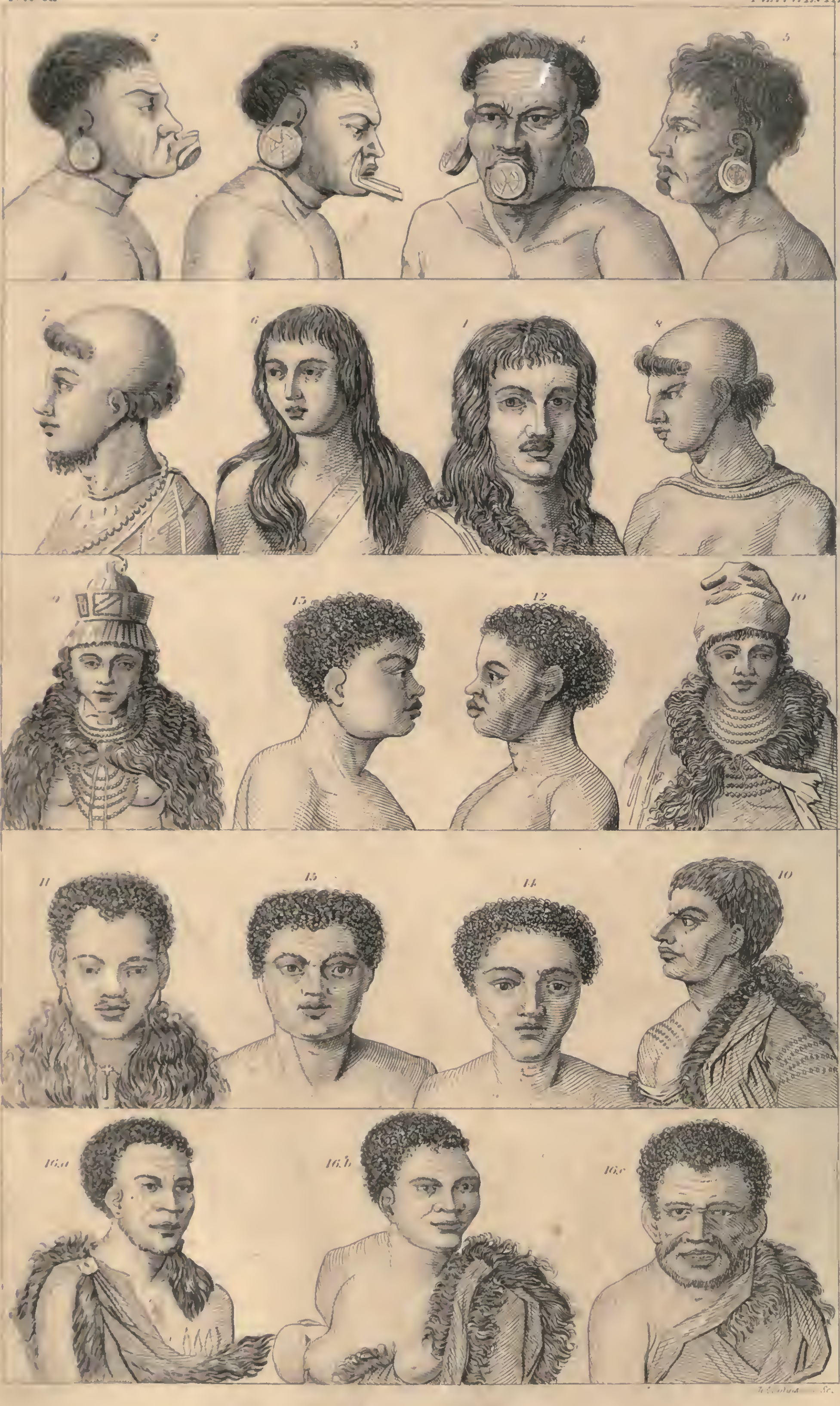

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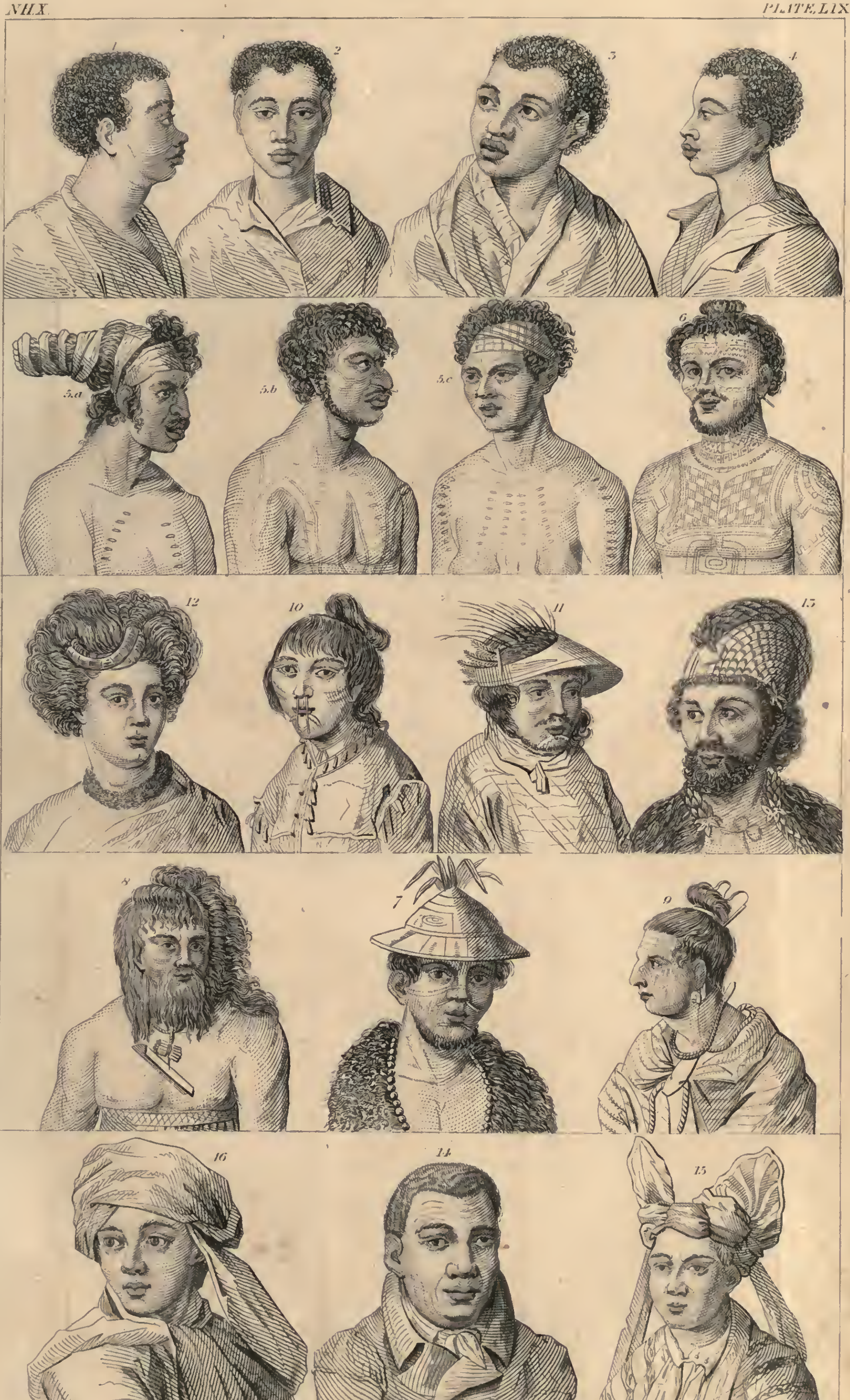

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THE

POPULAR ENCYCLOPEDIA;

OR,

CONVERSATIONS LEXICON.

MISSOLONGHI, or MISSOLUNGHI; till 1826 the principal stronghold of the Greeks in Western Greece (in the ancient Ætolia). Surrounded by morasses, Missolonghi is situated on an alluvial tongue of land, on a shallow bay, west of the entrance of the gulf of Patras and of the outlet of the Evenus (now the *Fidaris*), and east of the mouth of the Achelous (now *Aspropotamo*), and was the bulwark of Western Greece in the late struggle with Turkey. The dikes formed by the alluvion, secure the lower parts of the place against inundations, and the lagoons and shallows protect the city against an attack by sea. Missolonghi, also called by the Greeks *Little Venice,* was, originally, a fishing village, with about 300 inhabitants. At the entrance to the fishing stations lies the island of Anatolico, likewise fortified. Both places can be approached only by fishing boats; the roadsteads for larger vessels are four or five miles distant. Previous to 1804 Missolonghi, which was protected from the pestilential atmosphere of the marshes and lagoons by a north wind that blows every afternoon, contained about 4000 inhabitants (among whom were rich merchants and shipmasters), most of whom left the place on account of the war. It was then governed chiefly by its own laws, merely paying to the pacha of Negropont the customary poll tax. In 1804, it fell under the dominion of Ali Pacha. Missolonghi and Anatolico raised the banner of the cross June 7, 1821, when the Hydriot fleet appeared in their waters. After the bloody campaign of 1822, in Acarnania, the commander-in-chief, prince Mavrocordato, threw himself (Nov. 5th), with 380 men and twenty-two Suliots, under Marco Botzaris, into Missolonghi, which was then untenable and almost deserted, and defended it, with but little artillery and ammunition, against Omer Vrione, pacha of Janina, and Rutshuk Pacha, till on the 23d Nov., it was relieved and reinforced by sea. Mavrocordato afterwards repulsed several assaults, and compelled the Turks to raise the siege January 6, 1823. Missolonghi, with Anatolico, was then fortified under the superintendence of British officers, partly at the expense of Murray, an Englishman, so that it was rendered one of the strongest places of Greece. Missolonghi sustained a second siege of fifty-nine days, in September, October, and December, 1823, when Mustai, pacha of Scutari, with Omer Vrione, invested it by land, and several Algerine vessels by sea. It was defended by Constantine Botzaris, brother of the hero of Carpinitzi. Mavrocordato hastened to its relief, with Hydriot vessels, and the plague desolated the camp of the barbarians. Mustai, in his hasty retreat, lost his artillery and his army. Mavrocordato now remained master of the place, and directed affairs in Western Hellas. There was also in Missolonghi a school of ancient Greek. Missolonghi was also the death-place of lord Byron, who arrived at the end of January, 1824, and died, April 19th of the same year. Mavrocordato was called to Nauplia, and in 1825, deprived of his office by the party of Colocotroni. The seraskier Redshid Pacha now appeared before Missolonghi, with 35,000 men. The brave Noto Botzaris (uncle of Marco) defended the place successfully, and the assaults of the seraskier, aided by the fleet of the capudan pacha, after the walls had suffered from a bombardment of forty days, were repulsed in the beginning of August, 1825. Ibrahim Pacha, with the Egyptian army, then joined in the siege. But all assaults were baffled: continued bombardments at length reduced the place to a heap of ruins, and the heroic garrison determined to force a passage through the besiegers. This was attempted at about eight o'clock in the evening of April 22, 1826, while the sick, aged, and wounded, with many women, remained behind in a large mill, which contained a quantity of powder, and which they prepared to blow up as soon as it was entered by the Turks. An old wounded soldier took his seat on a mine, and fired it as soon as they entered the town. About 1800, under the command of Noto Botzaris and Kitros Travellas reached Salona, and afterwards fought at Athens.—See Fabre's *Hist. du Siège de Missolunghi* (Paris, 1826).

MISSOURI; a very large river in the United States, which unites with the Mississippi a little below latitude 39°. It rises in the Rocky mountains, and takes the name *Missouri* in latitude 45° 10′ N. and longitude 110° W., where the three branches, Jefferson, Gallatin, and Madison, unite. The spring sources of the Missouri, and those of the Columbia which flows west to the Pacific, are within a mile of each other. The three head branches of the Missouri are navigable for a considerable distance before their junction. Where the river makes its escape from the Rocky mountains, it presents a scene of remarkable sublimity. For a distance of nearly six miles, the rocks rise perpendicularly from the water's edge 1200 feet. The river is compressed to the width of 150 yards, where it rushes through these gates of the Rocky mountains. About 110 miles from this chasm, are the stupendous cataracts of the Missouri. The greatest cascade is eighty-seven feet perpendicular, and the next is forty-seven. Within a space of eighteen miles, the river descends 357 feet. These falls are almost the only obstruction to the navigation of the river, even to its head branches, 251 miles above the falls. These distances are given from Lewis and Clarke; and, according to their estimates, the whole length of the Missouri, above its junction with the Mississippi, is more than 3100 miles. Add to this the distance from the mouth of the Missouri to the gulf of Mexico, and the sum will be nearly 4400 miles. We have no means, at present, of giving a more probable estimate. The number of large rivers which flow into the Missouri is so great, that we can enumerate only a small part of them. Yellow Stone, Platte, Osage, and Kansas, are noticed separately. The Chienne is considered navigable by boats 800 miles; White river, 600; and several others are broad, deep streams, navigable for more than a hundred miles. Through most of its course, the Missouri is very rapid and turbid. The alluvial tract on its banks is narrower than that of the Mississippi. There are many settlements on the banks for 400 miles from its mouth, and a few are found more than twice that distance. Beyond the state of Missouri, the river and its branches have generally but narrow margins of fertile land. In many places, the prairies come even to their banks; and emigrants pass onward, and leave such unpromising lands for future generations. The Missouri is much longer than the Mississippi before their junction, and has a much greater volume of water. It is about half a mile wide at its mouth, but is wider for a great part of its course.

MISSOURI, one of the United States of America, is situated between 36° and 40° 30′ N. latitude, and between 88° 17′ and 94° 30′ W. longitude. Its length is 270 miles, and its breadth 220, and it contains 38 million acres; bounded north and west by Missouri Territory; east and north-east by the Mississippi, which separates it from Illinois; south-east by the Mississippi, which separates it from Kentucky and Tennessee; south by Arkansas Territory. Population in 1820, 66,586, of whom 10,222 were slaves. Persons engaged in agriculture, 13,559; in manufactures, 1887; in commerce, 480. Population in 1830, 140,074, of whom 24,990 were slaves. The south-east part of the state has a very extensive tract of low marshy country, abounding in lakes, and liable to inundation. Back of this there is a region of hilly and mountainous country, extending to the Osage. The best land in the state is north of the Missouri. This part contains large tracts of alluvial and hilly prairies, and is nowhere mountainous. The soil here is excellent. It is less clayey and stiff than that of Ohio and Kentucky. There is also an immense prairie commencing in the western part of the state, and extending far into the Missouri Territory. The soil of the upland prairies is far inferior to that of the alluvial prairies. The staple productions have been wheat and Indian corn, during the short period that any part of Missouri has been cultivated. Its soil will also produce the other kinds of grain in perfection, and also the various fruits which grow in the states having the same latitude. Tobacco thrives well, and cotton yields a tolerable crop. Flax and hemp are likely to become largely cultivated. Indeed, many parts of this extensive state are likely to rival the best tracts east of the Mississippi in the abundance of their productions. The praries, being entirely destitute of trees and shrubs, are ready for the plough; and there are such extensive tracts of this land in this state, which are admirably suited to the growth of wheat, that many nations might here be supplied. In the spring, every prairie is a perfect flower garden, exceeding other gardens in extent scarcely more than in the variety and beauty of its flowers. Many of the species are seen through summer and autumn. The climate is extremely fickle and variable, and the changes of temperature are very great. The prevailing winds follow the direction of the Mississippi Valley; those from the northward are cold, and the southern are warm. Winter commences in its severity about Christmas, and is frequently so severe, that the Missouri is passable on the ice with loaded teams, for many weeks. The summers are very warm. Less rain falls here than in New-England or the Southern States; and the atmosphere is much drier. Of the minerals and fossils already discovered, the principal are lead, coal, plaster, iron, manganese, zinc, antimony, cobalt, various kinds of ochre, common salt, nitre, plumbago, porphyry, jasper, chalcedony, and marble. Lead ore is dug in various parts of the state, but there is a district extending nearly a hundred miles in length, and forty in width, which is particularly distinguished for its lead mines. The centre of the part which has been most explored, is about seventy miles south-west from St Louis, and about half as far from Herculaneum on the Mississippi. The French dug lead from these mines 100 years ago. Somewhat more than 3,000,000 pounds are annually smelted, giving employment to about 1200 workmen. Shot-towers are erected at Herculaneum and other places, and great quantities of shot are exported. The mine country is remarkable for its salubrity, the fertility of its soil, and its beautiful streams. There is doubtless ore enough, of excellent quality, to supply the whole world with lead. The great river Missouri traverses this state. The Osage is its principal southern branch, and will be described separately. Several considerable rivers unite their waters with the Missouri on the northern side, and others with the Mississippi. The Maramec runs through the mineral district, and enters the Mississippi eighteen miles below St Louis. It is between 200 and 300 yards wide, and navigable by boats at some seasons 200 miles. Many of the small rivers are dry a part of the summer. St Louis is the commercial capital, and is the largest town of the United States west of the Mississippi. St Genevieve, about one hundred miles west of the Mississippi, and sixty-four below St Louis, is settled principally by French. It has about 1500 inhabitants, and considerable trade in lead. Jackson, the county town of Cape Girardeau county, is a thriving village. Potosi, in the mining district, is a considerable town. Herculaneum is the principal place of deposit for the lead from the mines. New Madrid is, next to Natchez, the most noted landing place for boats on the Mississippi. It suffered greatly from an earthquake in 1811. St Charles, about twenty miles above St Louis, contains about 1200 inhabitants. Jefferson, a new town at the mouth of the Osage, is the present seat of government. Franklin, 150 miles by land above St Louis, is a considerable village. The most numerous denominations of Christians in Missouri, are Methodists, Presbyterians, and Catholics. Religious instruction and good schools are less esteemed and less common in this new state than in most others in the Union. St Louis college, a Catholic institution, was founded in 1829. The college building is a brick edifice, fifty feet by forty; but this is not sufficiently commodious, and preparations have been made for enlarging it. It is situated very pleasantly in the neighbourhood of the city. It has a president, six professors, and 125 students. Two other professors are about to be added. The library contains 1200 volumes. This institution is likely to become very useful to the state. Corporations have been formed for nine academies. St Louis was founded in 1764; the principal inhabitants were from Canada. This country was settled but slowly until it was purchased by the United States; since that period, immigration has almost annually increased. In 1820, Missouri became an independent state, and it will, doubtless, become one of the most populous in the Union. For the constitution, see *Constitutions of the United States*. A good description of Missouri, and of all the states of the Mississippi Valley, may be obtained from Flint's Geography, &c.

MISSOURI TERRITORY; a tract of country belonging to the United States, 900 miles long, and 800 broad; bounded by the British possessions on the north; the North-West Territory, Illinois and Missouri on the east; the territories of the Mexican republic on the south and south-west; and west by the Rocky mountains. The belt of land on the west border of the Mississippi, that is wooded, is generally from two to four hundred miles broad. Then commence the immense prairies, which constitute so striking and impressive a feature in the vast country that spreads westward to the Rocky mountains. For the most part, this country is a plain, more or less covered with grass, and in many places, fertile; but other parts, of great extent, are almost a moving sand. Countless numbers of buffaloes, elks, and other wild animals, graze upon it. The principal sources of the Missouri, Arkansas, and Red river, are found in this territory, and several large branches of the Mississippi, above the Missouri, come from the north-western part of the same vast country. The Rocky mountains are yet but imperfectly known. Their bases have generally an elevation of 3 or 4000 feet above the ocean, and some of them are estimated at 12,000 feet in height. Following up the valleys of the sources of the Platte to the opposite valleys of waters that flow west, a good road is found, easily passable with loaded wagons. Thus an easy communication is provided between the navigable rivers of the Oregon territory, on the borders of the Pacific ocean, and those which flow into the gulf of Mexico. There are other ranges of mountains, which traverse different parts of this territory, as the Black hills, the Ozark mountains, the Masserne, &c. There are fertile belts of land on the margins of most of the rivers, and some of them have a great extent of rich country. Generally, as we recede from the rivers, the soil becomes poor, and very extensive deserts are found in the southern regions. There are very few settlements of whites in this vast country, and none so considerable as to have any established government. At Council Bluffs there is a military post, having one regiment of infantry. Many tribes of Indians still possess extensive tracts. The Sioux are the most numerous; the whole number is estimated at between 140,000 and 150,000.

MISTLETOE. See *Misletoe*.

MITE. Several minute species of insects are known under the name of *mites*, most of which, however, belong to the genus *acarus* of Linnæus. The most of these animals are very small, or almost microscopic. They occur everywhere, some being of a wandering character and to be found under stones, leaves, the bark of trees, or in provisions, as meal, cheese, pepper, &c.; others are stationary and parasitic, on the skin of various animals, sometimes proving of serious injury to them. It is even asserted, and with great appearance of truth, that the itch is owing to these animals. From the experiments of several inquirers, it appears they not only have been seen in the pustules of the itch, but also that they are capable of giving it to a healthy individual by being placed on his skin. This is, however, denied by other and very high authority. The mites inhabiting cheese are so minute that to the naked eye they appear like moving particles of dust. They are very quick-sighted, and when once they have been touched with a pin, it is curious to observe the cunning which they display to avoid a second touch. They are extremely voracious, and will even prey on each other, and are so tenacious of life that they have been kept alive for many months between object-glasses of a microscope. The species which is found in meal occasions considerable injury. Leuwenhoek states that they may be expelled by placing a few nutmegs in the vessel or sack containing the meal. A German writer, named Funke, advises a cheaper remedy, which consists of the decorticated, thick branches of the lilac, or elder, which are to be put in the flour, and will, it is said, completely prevent their depredations. See *Tick*.

MITE; a small coin, formerly current, equal to about one third of a farthing; it also denotes a small weight used by the moneyers. It is equal to the twentieth part of a grain, and divided into twenty-four doits.

MITFORD, WILLIAM; an eminent historical and philological writer, born in London, February 10 1734. He studied at Queen's college, Oxford, and then at the Middle Temple, but early quitted the profession of the law, and obtained a commission in the Southamptonshire militia, of which he became colonel. In 1785, he was chosen member of parliament, in which he sat till 1818. His death took place in 1827. He was professor of ancient history at the royal academy; and, besides his principal work, the History of Greece (1784—1810, 4 vols., 4to; since reprinted in 8vo), he published an Essay on the Harmony of Language (1774, 8vo); a Treatise on the Military Force, and particularly the Militia of this kingdom (8vo); Observations on the History of Christianity (8vo); a work on architecture, and another on the corn-laws.

MITHRA; the sun, or the genius of the sun, with the Persians, which was worshipped as a deity, at a later period, also in Greece and Rome. Mithra stands as a mediator between Ormuzd and the world. His symbols are the sun (of truth and justice) on his head, the mace (power) in his hand, or the sacrificing dagger, and the bull of the world, on whose back he lies. He is not to be confounded with the Mitra, or Anahid, the Persian Venus. Even in Germany, there are traces of his worship, in the provinces anciently under the dominion of the Romans.

MITHRIDATES; the name of several kings of Pontus, among whom Mithridates the Great, or the VIth, was the most renowned. Ambition, cruelty, a spirit which nothing could bend, united with a powerful genius, were the characteristics which early developed themselves in his character. His father was murdered B. C. 124, and Mithridates ascended the throne at the age of thirteen years. His mother and instructor plotted against his life; but he caused the former to be thrown into prison (although she had been made co-regent with him), where she died, according to some, of ill treatment, but according to others of poison. He hardened his body against exposure, and endeavoured to render himself insensible to the effects of poison (whence the name of a supposed antidote, *Mithridate*). When he became of age, he travelled through Asia, partly to learn the customs, laws, manners, and languages of the inhabitants (and he is said to have spoken twenty-two languages), and partly to examine the territories of his neighbours, of which he meditated the conquest. After an absence of three years, he returned, and put to death his wife, who had been unfaithful, and had attempted to poison him. He then attacked Paphlagonia, and divided it with his ally, the king of Bithynia. The Romans, who had declared the country free, threatened him with a war; but Mithridates was so little alarmed at this threat, that he even possessed himself of Galatia, which had placed itself under the protection of Rome. He next directed his attention to Cappadocia; but, fearing the power of Ariarathes, who was in possession of this country, and his connexion with the Romans, he had recourse to treachery, and caused him to be assassinated. At the same time, Nicomedes, king of Bithynia, entered Cappadocia, drove out the son of the murdered king, and married Laodice, the widow of Ariarathes and the sister of Mithridates. The latter then took the opportunity of re-entering Cappadocia, conquered it, and replaced his nephew on the throne; but he soon compelled the young prince, by his dishonourable requisitions, to a declaration of war. They marched against each other, with about equal forces. Mithridates then offered terms of peace, and invited the young prince to a conference, in which he killed him with a dagger, in the sight of both armies. The Cappadocians, seeing their master fall, were seized with terror, and Mithridates possessed himself of the country, almost without opposition. Nicomedes now concerted with his wife the plan of suborning a young man to represent the third son of Ariarathes, and caused him to send to Rome to implore assistance. Laodice herself performed a journey to Rome, in order to confirm his story. Mithridates took advantage of this fraud to endeavour to prove to the Romans that the young prince to whom he had given up Cappadocia (who was his own son, to whom he had given the name of Ariarathes) was the real son of Ariarathes. The Romans, having discovered this double fraud, took Cappadocia from Mithridates, and Paphlagonia from Nicomedes; and the Cappadocians elected Ariobarzanes their king. Scarcely had Sylla, whose arms had elevated the latter to the throne, left Asia, when Mithridates, with the assistance of Tigranes, king of Armenia, replaced his son upon the Cappadocian throne. He also, at the same time, took Bithynia, and gave that country to his brother Socrates Christos. The Romans, however, soon restored things to their former condition. Mithridates then declared himself against the Romans, and, because they would not acquiesce in his demands, he suddenly fell upon Cappadocia and Bithynia at the same time. His forces amounted to 250,000 foot, 50,000 horse, 130 chariots armed with scythes, and 400 ships. Those of the Romans, with the Bithynian auxiliaries, were not much inferior, and were commanded by Cassius, Aquilius, and Oppius. Mithridates was successful at the opening of the war. He not only defeated Nicomedes, but also Aquilius, conquered Bithynia, and captured a great part of the Roman fleet. Phrygia, Caria, Mysia, Lycia, Pamphylia, Paphlagonia, and all the country as far as Ionia, fell into his hands, and hailed him as the saviour of Asia. The Roman generals Oppius and Aquilius were also given up to him as prisoners by the inhabitants of Laodicea and Lesbos; and he caused melted gold to be poured down the throat of the latter, in derision of the avarice of the Romans. The free cities of Asia, Magnesia, Mitylene, Ephesus, &c., opened their gates to the victor, who collected treasure sufficient to maintain his army five years. He caused all the Roman citizens in Asia Minor, with their wives and children, to be put to death. Dionysius and Plutarch give the number of those who perished at 150,000; Appian at 80,000. Mithridates next conquered the islands of the Ægean sea. Rhodes, however, held out so firmly that he returned to Pergamus. From hence he sent his general Archelaus, with 120,000 men, to Greece. Athens fell by treachery into his hands, and various other places were taken, while another of his generals, Metrophanes, ravaged Eubœa. On the news of the defeat of the latter, Mithridates sent his son Ariarathes, with a powerful army, into Macedonia, which, with Thrace, was speedily conquered. His arms were everywhere victorious, until, at length, the report that he threatened Italy itself, led the Romans to adopt more decisive measures. Sylla embarked for Greece, reduced Athens by famine, destroyed the army of Archelaus in a bloody contest at Chæronea, and emancipated all Greece by two victories in Bœotia. Fimbria, with no less success, reduced Asia Minor, and besieged Mithridates himself in the fortress of Pitane, who finally fled to his ships. The Pontic fleet was also twice defeated by Lucullus. Thus pressed on every side, Mithridates commissioned Archelaus to conclude a treaty, which Sylla granted, under severe conditions, B. C. 89. Mithridates was limited to his hereditary kingdom of Pontus, and compelled to deliver into the hands of the Romans eighty ships of war manned, and to pay 2000 talents. Sylla had scarcely left Asia before Mithridates attacked Colchis, and refused to fulfil the conditions of the peace. The Roman general, Muræna, who entered and ravaged Pontus, was defeated, and many cities of Asia had declared themselves for the victor, when Aulus Gabinius, sent by the dictator Sylla, appeared. Cappadocia was evacuated by Mithridates; but, on the other hand, he subdued the Bosphorians (B. C. 82), and had no sooner heard of the death of Sylla (B. C. 78), than he determined to recover the countries he had ceded, and, in order to distract the Romans, entered into a treaty with Sertorius, the chief of the Marian faction in Spain. His son-in-law Tigranes, king of Armenia, entered into his designs, and marched to Cappadocia, while Mithridates himself, after the subjugation of Paphlagonia, conquered Bithynia and the provinces of Asia. A new war with Rome was now unavoidable. The consuls Lucullus and Cotta went against Mithridates, the latter as commander of the fleet, and the former as general of the land forces. Cotta was unsuccessful; Lucullus, on the contrary, cautiously avoided a general engagement with the superior forces of the enemy, but at the same time gained so many important advantages, by sea and land, that he soon entered Pontus as a conqueror. While he was besieging Amisus, Mithridates collected an army, and gained a decided victory; yet Lucullus succeeded in regaining what he had lost, and Mithridates found himself compelled, by the revolt of his own troops, to fly to Tigranes, in Armenia, who received him, but did not make common cause with him. Lucullus, who had, in the mean time, transformed Pontus into a Roman province, demanded the surrender of Mithridates, which Tigranes refused, because, as he said, although he disapproved the conduct of Mithridates, he nevertheless esteemed it dishonourable to deliver up so near a connexion to his enemies; but, as he foresaw that the Romans would not be contented with this answer, he agreed with Mithridates that he should return to Pontus with 10,000 men, collect an army, and return with it before Lucullus, who was besieging Sinope, should come into Armenia. Sinope, however, surrendered sooner than they expected, and Lucullus defeated Tigranes before his junction with Mithridates. Tigranes, nevertheless, collected a new army, which Mithridates led into Pontus. Lucullus, however, checked his progress by a victory; but, during the winter, Mithridates strengthened his forces, and soon entirely defeated the lieutenants of Lucullus, and then directed his march towards Armenia Minor, to form a junction with Tigranes. In the mean time, the consul Manius Acilius Glabrio had taken the chief command, in the place of Lucullus. The allied kings took advantage of the confusion incidental to this change, and reconquered the greatest part of Pontus, Bithynia, Cappadocia, and Armenia Minor. Pompey then appeared at the head of the Roman army. After he had in vain offered him peace, and sought a decisive battle, he besieged Mithridates in his camp, not far from the Euphrates. The king thence retreated, but was pursued, attacked in a defile, and totally routed at Nicopolis (B. C. 66); he escaped with only 800 horse. Tigranes would not receive him, and he fled to Colchis. Pompey followed him, and he took refuge in the dominions of a Scythian prince. He was now thought to be dead, until he suddenly reappeared in Pontus, collected troops, and, at the same time, offered terms of peace to Pompey; they could not, however, agree, and the war broke out afresh. The force of the Romans in Pontus was small, and Mithridates made some progress. The inhabitants, however, soon revolted from him, and his neighbours refused him their assistance; nevertheless, his unbending spirit rejected the proposals of peace made by Pompey. He put to death his son Machares, made himself king in Bosphorus, and formed the bold project of penetrating into Gaul (where he had sent ambassadors) at the head of his army, and marching, with the inhabitants, into Italy; but, having encamped at the Cimmerian Bosphorus, an insurrection broke out in his army, at the head of which was his son Pharnazes. Unable to reduce the rebels to their duty, and having taken poison without effect, Mithridates threw himself upon his sword, that he might not fall alive into the hands of the Romans (B. C. 64.) This celebrated monarch ruled Pontus fifty-nine years.

MITHRIDATES; the title given to the *Allgemeine Sprachenkunde* of Adelung and Vater, in which the Lord's prayer is exhibited in nearly five hundred languages and dialects. See *Vater*.

MITRA; a head-dress of the ancient Persian kings. See *Infula*.

Mitra; the ancient Persian goddess of love.

MITRE (Greek *μιτϱα*), in costume; a sacerdotal ornament, worn on the head by bishops and certain abbots on solemn occasions, being a sort of cap, pointed and cleft at top. The high priest among the Jews wore a mitre, or bonnet, on his head. The inferior priests of that nation had likewise their mitres, but in what particulars they differed from that worn by the high priest, is not now certain. Some writers contend that the earlier bishops wore mitres; but this circumstance is also enveloped in a good deal of doubt. Among the primitive followers of Christianity, there was a class of young women who professed a state of virginity, and were solemnly consecrated thereto. These wore a purple and golden mitre, as a badge of distinction. His holiness the pope uses four different mitres, which are more or less rich, adorned according to the nature of the festivals on which they are assumed. The cardinals formerly wore mitres, and some canons of cathedrals in Roman Catholic countries have the privilege of wearing the mitre, which is also borne by several families of distinction in Germany as their crest. But we must look back into remoter ages, in order to find the origin of the use of the mitre. It would seem to have obtained primarily in India. According to several authors, it was first a part of female costume, and when worn by a man was considered as indicative of effeminacy. The fillet, with which Bacchus is often represented as having his head bound, has been denominated *mitrephora*. A peculiar kind of head-dress, covering the whole head, is often found depicted on ancient coins, &c., with pendents, or pointed dewlaps, by means of which, perhaps, this kind of mitre was tied under the chin. This was probably the Phrygian mitre; for we find Paris with this head-dress on a gem published by Natter, and subsequently by Winckelmann, in his *Monumenti Inediti* (No. 112). Priam, and the Amazons, upon the Homeric monuments, and the Parthian kings, upon several medals, have a similar mitre. The mitre is very frequently met with in early Christian manuscripts, in illuminated missals, and upon the oldest ecclesiastical monuments; this, however, might be expected, since its usage has always been principally ecclesiastical. A statue of St Peter, erected in the seventh century, bears this mark of distinction, in the shape of a round, high, and pyramidal mitre, such as those worn by each of the popes since. Perhaps this statue offers one of the earliest instances of its usage in the Christian churches. See *Infula*, and *Tiara*.

MITTAU (in Lettonian, *Jelgava*); a city of Russia; chief city of the government of Mittau (see *Courland*), lat. 56° 39′ N.; lon. 23° 43′ E. It is situated in a low and marshy country, about nine leagues from Riga. The population is 12,000, composed of Russians, Germans, Lettonians, and Jews. The old ramparts have been destroyed. It contains numerous charitable and literary institutions. The old castle, founded by the duke Ernest John, was occupied by Louis XVIII. for several years. Mittau, the ancient residence of the dukes of Courland, was captured by the Swedes in 1701, and recovered by the Russians in 1706.

MITTIMUS; a writ by which records are transferred from one court to another. The precept directed to a gaoler, under the hand and seal of a justice of the peace, for the receiving and safe keeping of a felon, or other offender, by him committed to gaol, is also called a *mittimus*.

MIZZEN; the aftermost or hindermost of the fixed sails of a ship.

MIZZEN MAST; the mast which supports all the after sails. See *Ship*.

MNEMONICS (from the Greek *μνημονευω*, to remember); the art of assisting the memory. In the article *Memory*, the liveliness with which ideas are often recalled by accidental associations, has been spoken of. This very naturally led men to attach ideas, words, &c., purposely, to certain things familiar to the mind, in order to be assisted by the latter in remembering the former. One kind of mnemonics, and perhaps the earliest, is to attach the idea to be remembered to some impression of the senses, such as the external objects which are most familiar to our eyes (*topology*, from *τοπος*, place): some persons make use of a picture, arbitrarily drawn, to which they attach the subjects to be remembered, in a certain order (*symbolics*, from *συμϐολον*, mark); others make use of numbers. There are certain natural aids to the memory, which we all employ; for instance, if we put a piece of paper in a conspicuous spot of our room, or make a knot in a handkerchief, in order to be reminded of certain things at particular times. As to topology, an orator who intends to deliver a long speech without notes, may derive assistance from previously entering the room where he is to speak, and attaching in his mind to certain prominent objects in the room the chief heads of his speech. To remember dates, several methods have been devised. The one proposed in Gray's *Memoria Technica* is to make certain changes in the names of persons, places, &c., in such a way that the words shall signify also certain numbers, according to a plan previously adopted. A table must be drawn up, similar to the following:—

a	*e*	*i*	*o*	*u*	*au*	*oi*	*ei*	*ou*	*y*
1	2	3	4	5	6	7	8	9	0
b	*d*	*t*	*f*	*l*	*s*	*p*	*k*	*n*	*x*

If we now wish to impress in our memory that Julius

Cæsar arrived at the supreme power 46 B. C., we may change the *Julius* into *Julios*, which will be easily remembered whenever we think of *Julius*, and *os* signifies, according to the above plan, 46. If we wish to remember that Alexander the Great founded his empire 331 B. C., we change *Alexander* into *Alexita*, *ita* signifying 331, according to the above. In the same way *Cyrus*, changed into *Cyruts*, gives the year of the foundation of his great empire. This method may much facilitate the retaining of facts to a certain extent; but it would seem as if the changes themselves might become too numerous to be easily remembered.

Systems of mnemonics of a more *general* character have been proposed; few, however, or none, have remained in vogue for any length of time. Generally speaking, mnemonics ought to be individual; each individual ought to find out that method of assisting his memory which is most convenient to himself; and this will vary, of course, with his habitual associations. The only true basis of a philosophic memory, however, is just classification. (See *Memory*.) Considerable aid to the memory may be derived from the use of rhymes, or a rhythmical arrangement of words. Remote antiquity made use of rhythm to preserve the memory of historical facts before the invention of writing. The ancients were well acquainted with mnemonics; according to some, the science came from the east to the Greeks; others consider the poet Simonides as the inventor of them; but such inventions cannot be properly assigned to any particular individual. In the time of Cicero it was known among the Romans (see Cicero *De Oratore* ii. 86 et seq.; *Auct. ad Herenn.* iii. 16 seq.; Quinctil. x, 1, 11 seq. After Quinctilian's time, mnemonics again declined. In considering the use of mnemonics by the ancient orators, we should remember that they delivered long orations indeed, but had nothing like our debates, in which a member of a deliberative body sometimes rises, and speaks for hours in succession, recapitulating all which has been said before him on the question, and therefore, to a considerable degree, without premeditation. Most of the systems of mnemonics devised for the ancients, would be useless for a parliamentary orator of the present day. In the place of the ancient mnemonics, the schoolmen used the tabellary method. Conrad Celtes, in the fifteenth century, and Schenkel, in the sixteenth, re-ëstablished the ancient system. In modern times, several scholars have given much attention to this subject. Some of the best works are Kastner's *Mnemonik, oder die Gedächtnisskunst der Alten* (Leipsic, 1805); *Systematische Anleitung zur Theorie und Praxis der Mnemonik*, by Aretin (Sulzbach, 1810); Feinagle's New Art of Memory, to which is prefixed some Account of the Principal Systems of Artificial Memory (London, 1812); Gray's *Memoria Technica* (1730). The degree to which the power of memory has been sometimes carried, is almost incredible. Thus Seneca states, that, by the mere effort of his natural memory, he was able to repeat 2000 words upon once hearing them, each in its order, though they had no dependence or connexion on each other. He also mentions Cyneas, ambassador to the Romans from king Pyrrhus, who in one day so well learned the names of the people whom he saw, that the next day he saluted all the senators, and all of the populace assembled, each by his proper name. Pliny says that Cyrus knew every soldier in his army by name, and L. Scipio all the people of Rome. Charmipas, or rather Carneades, when required, it is said, would repeat any volume found in the libraries as readily as if he were reading. Doctor Wallis tells us, that, without the assistance of pen and ink, or any thing equivalent, he was able in the dark, by the mere force of memory, to perform arithmetical operations, as multiplication, division, extraction of roots, &c., to forty places. It is said of Magliabecchi, that a gentleman, having lent him a manuscript which he was going to print, came to him soon after it was returned, and, pretending that he had lost it, desired him to repeat as much of it as he could; on which Magliabecchi wrote down the whole, without missing a word or varying the spelling.

MNEMOSYNE (Greek, *Memory*), in the Grecian mythology; daughter of Uranus (*Cœlus*, Heaven) and Gaia (*Terra*, Earth), and by Jupiter the mother of the nine Muses. (q. v.)

Mo signifies *tribe, nation*, in many idioms of Southern Africa.

MOAB; the land of the Moabites, an Arabian tribe, dwelling in the mountainous region east of the Dead sea, from Zoar to the river Arnon, between the Midianites, Edomites, and Amorites. According to the Mosaic account (*Gen.* xix. 30), the Moabites were descended from Moab, the son of Lot by his eldest daughter. In the time of the judges, they were for eighteen years masters of the Hebrews, but in the time of David, were rendered tributaries to them. After the Babylonish captivity, they lost their separate national existence. Their principal leaders mentioned in scripture, are Balak and Eglon; their idols were Peor and Chemosh.

MOALLAKAT (i. e. *the hung up*); seven Arabian poems of the time immediately preceding Mohammed, which, on account of their excellence, were suspended in public, on the temple at Mecca. An English translation with arguments, and the Arabic text, was published by Sir W. Jones (London, 1783.) See *Arabian Literature*.

MOAT, or DITCH, in fortification, a deep trench dug round the rampart of a fortified place, to prevent surprises. The brink of the moat next the rampart, is called the *scarp*; and the opposite one, the *counterscarp*. A dry moat round a large place, with a strong garrison, is preferable to one full of water; because the passage may be disputed inch by inch, and the besiegers, when lodged in it, are continually exposed to the bombs, grenades, and other fire-works, which are thrown incessantly from the rampart into their works. In the middle of dry moats, there is sometimes another small one called *lunette*, which is generally dug till the water fills it. The deepest and broadest moats are accounted the best; but a deep one is preferable to a broad one; the ordinary breadth is about twenty fathoms, and the depth about sixteen. To drain a moat that is full of water, a trench is dug deeper than the level of the water, to let it run off, and then hurdles are thrown upon the mud and slime, covered with earth or bundles of rushes, to make a sure and firm passage.

MOBILE; a city, port of entry, and capital of Mobile county, Alabama, on the west side of Mobile river, at its entrance into the bay. It is thirty miles north of Mobile point, which is on the east side of the mouth of the bay; fifty-five miles west by north from Pensacola; and 160 east from New Orleans; lat. 30° 40′ N.; lon. 88° 21′ W. In 1813, this town came into the possession of the United States, and then contained about 300 inhabitants. In 1822, its population was estimated at 2800; and in 1830, it contained 3194.—Mobile is situated considerably above the overflow of the river, in a dry and pleasant place; but access to the city is rendered somewhat difficult by a swampy island opposite. It has, moreover, swampy lands and stagnant waters back of it; and near it is a sterile country of pine woods. The city has several times been ravaged by the yellow fever, and has once been almost wholly destroyed by fire. Advantage was taken of the sickliness of Mobile, a few years since, to establish the town of Blakely, on the eastern and opposite side of the bay, and ten miles distant from Mobile. Besides being healthy, this site has many very important advantages over Mobile; but the project of establishing it as a substitute for Mobile, entirely failed. Only New Orleans and Charleston are before Mobile in the cotton trade, and Charleston is declining, while Mobile is rapidly increasing. The value of exports of domestic produce from Alabama in 1829, was 1,679,385 dollars; and nearly the whole of this must have been shipped at Mobile. This city has a regular steam-boat communication with New Orleans through lake Ponchartrain. During most of the year, steam-boats are constantly plying between this place and the towns on the river, and many vessels are loading at the wharves for distant ports.

MOBILE; a river of Alabama, formed by the union of the Alabama and the Tombeckbee. It takes the name of *Mobile* where these two rivers unite at fort Mimms. It enters Mobile bay by two mouths. The Alabama is the eastern branch, and rises in the Alleghany ridges of Georgia. It receives a number of small streams, and becomes navigable for small sea vessels at fort Claiborne. Similar vessels ascend the Tombeckbee to the mouth of the Black Warrior, eighty miles above St Stephens. At moderate stages of water it affords steam-boat navigation to Tuscaloosa, 320 miles from Mobile. Both these rivers are very favourable to boat navigation. The lands on their borders are excellent, and produce great quantities of cotton.

MOBILITY; a contingent property of bodies, but most essential to their constitution. Every body at rest can be put in motion, and if no impediment intervenes, this change may be effected by the slightest external impression. Thus the largest cannon ball, suspended freely by a rod or chain from a lofty ceiling, is visibly agitated by the horizontal stroke of a swan shot which has gained some velocity in its descent through the arc of a pendulum. In like manner, a ship of any burden is, in calm weather and smooth water, gradually pulled along even by the exertions of a boy. A certain measure of force, indeed, is often required to commence or to maintain the motion; but this consideration is wholly extrinsic, and depends on the obstacles at first to be overcome, and on the resistance which is afterwards encountered. If the adhesion and intervention of other bodies were absolutely precluded, motion would be generated by the smallest pressure, and would continue with undiminished energy.

MOCHA, or MOKKA; a town on the Arabian sea, in the province of Yemen, with a commodious harbour, and about 6000 inhabitants, including several hundred Jews and about 500 Banians. It is frequented by merchants from the Barbary States, Egypt, Turkey, and India, and by British, French, and North American ships. The coffee which bears the name of the town, is brought down from the interior of the country by caravans. Gum Arabic, copal, mastich, myrrh, frankincense, indigo, senna, and other articles, are exported. The imports are chiefly Indian commodities. The trade is most active between May and August, in which period about 100 ships enter the port. There are several mosques, caravansaries, and European factories here. Lon. 43° 10′ E.; lat. 13° 16′ N.

MOCKING BIRD (*turdus polyglottos*). This capricious little mimic is of a cinereous colour; paler beneath. It inhabits America from New England to Brazil, but is rare and migratory in the Northern States, whilst it is common and resident in the Southern. This bird, although it cannot vie with most of the American species in brilliancy of plumage, is much sought for on account of its wonderful faculty of imitating the tone of every inhabitant of the woods, from the twitter of the humming-bird to the scream of the eagle. But its notes are not entirely imitative; its own song is bold, full, and exceedingly varied, during the utterance of which it appears in an ecstasy of delight. In confinement, it loses little of its power or energy. To use the words of Wilson, "He whistles for the dog; Cæsar starts up, wags his tail, and runs to meet his master. He squeaks out like a hurt chicken, and the hen hurries about, with hanging wings and bristled feathers, clucking, to protect her injured brood. The barking of the dog, the mewing of the cat, the creaking of the passing wheelbarrow, follow with great truth and rapidity. He repeats the tune taught him by his master, though of considerable length, fully and faithfully. He runs over the quiverings of the canary, or the clear whistlings of the Virginia nightingale or red-bird, with such superior execution and effect, that the mortified songsters feel their own inferiority, and become altogether silent; while he seems to triumph in their defeat, by redoubling his exertions."—The female lays from four to five eggs, of an ash-blue colour, marked with patches of brown; she incubates fourteen days, and is extremely jealous of her nest, being very apt to desert it if much disturbed. During the period when the young are in the nest, neither cat, dog, nor man can approach it without being attacked. When intended for the cage, they are either taken from the nest when they are very young, or at a later period by trap-cages.

MODALITY. Kant uses this word for that *category* (see *Kant*) which determines the relation of all the ideas of the judgment to our understanding. The logical modality of Kant is, therefore, the manner in which the understanding conceives the connexion and relation of ideas in a judgment; whether we leave something undecided, as in problematical judgments, or give the thing as true, as in assertory judgments, or are obliged to consider a certain connexion of ideas to be true, as in apodictical judgments. For further information, see the article *Kant.*

MODE; a particular system, or constitution of sounds, by which the octave is divided into certain intervals according to the genus. The doctrine of the ancients respecting modes is rendered somewhat obscure, by the difference among their authors as to the definitions, divisions, and names of their modes. Some place the specific variations of tones, or modes, in the manner of division, or order of the concinnous parts; and others merely in the different tension of the whole; that is, as the whole series of notes are more acute or grave, or as they stand higher or lower in the great scale of sounds. While the ancient music was confined within the narrow bounds of the tetrachord, the heptachord, and octachord, there were only three modes admitted, whose fundamentals were one tone distant from each other. The gravest of these was called the Dorian; the Phrygian was in the middle, and the acutest was the Lydian. In dividing each of these tones into two intervals, place was given to two other modes, the Ionian and the Æolian; the first of which was inserted between the Dorian and Phrygian, and the second between the Phrygian and Lydian. The system being at length extended both upward and downward, new modes were established, taking their denomination from the five first, by joining the preposition *hyper* (over or above) for those added at the acute extremity, and the preposition *hypo* (under) for those below. Thus the Lydian mode was followed by the Hyper-Dorian, the Hyper-Ionian, the Hyper-Phrygian, the Hyper-Æolian, and the Hyper-Lydian, in ascending; and the Dorian mode was succeeded by the Hypo-Lydian, Hypo-Æolian, Hypo-Phrygian, Hypo-Ionian, and the Hypo-Dorian, in descending. The moderns, however, only reckon two modes, the major and the minor. The major mode is that division of the octave by which the intervals between the third and fourth, and seventh and eighth, become half tones, and all the other intervals whole tones. The minor mode is that division by which the intervals between the second and third, and fifth and sixth, become half tones, and all the others whole tones. Another distinction also, exists between the major and minor modes; the major mode is the same, both ascending and descending; but the minor mode in ascending sharpens the sixth and seventh, thereby removing the half tone from between the fifth and sixth to the seventh and eighth.

MODEL; an original of any kind proposed for copy or imitation. It is used, in building, for an artificial pattern formed in stone or wood, or, as is most commonly the case, in plaster, with all due parts and proportions, for the more correct execution of some great work, and to afford an idea of the effect to be produced. Models in imitation of any natural or artificial substance are usually made by means of moulds of plaster of Paris. In painting, this is the name given to a man or woman who is procured to exhibit him or herself, in a state of nudity, for the advantage of the students. These models are provided in all academies and schools for painting, and the students who have acquired a tolerable use of the pencil are introduced to this kind of study. By this means, the details and porportions of the human shape, the play of the muscles, the varieties of expression, &c., are displayed and inculcated far better than by any course of lectures or any study of former works. It is desirable that the living models used in an academy, or even in a private painting room, should be changed as frequently as possible, or the student is in danger of falling into mannerism. Millin speaks of a model, of the name of Deschamps, who did duty in this way upwards of forty years in the academy at Paris, and comments on the facility with which this person's form and features might be recognized, in every variety of subject or of expression, in the paintings of the students of that period. In sculpture a model implies a figure made of wax or terra cotta, or any other malleable substance, which the artist moulds to guide him in fashioning his work, as the painter first makes a sketch, or the architect a design. When a model of any existing object is to be taken, the original is first to be greased, in order to prevent the plaster from sticking to it, and then to be placed on a smooth table, previously greased, or covered with a cloth, to guard against the same accident; then surround the original with a frame or ridge of glazier's putty, at such a distance as will admit of the plaster resting upon the table, on every side of the subject, for about an inch, or as much as may be thought sufficient to give the proper degree of strength to the mould. An adequate quantity of plaster is then to be poured as uniformly as possible over the whole substance, until it is everywhere covered to such a thickness as to give a proper substance to the mould, which may vary in proportion to the size. The whole must then be allowed to continue in this way till the plaster shall have attained its firmness; when the frame being removed, the mould may be inverted, and the subject taken from it; and when the plaster is thoroughly dry, it should be well seasoned.

MODENA; a sovereign duchy of Italy, lying in a fruitful plain of Lombardy, watered by the Panaro, and bordering on Tuscany, Lucca, Bologna, Mantua and Parma. By an act of the congress of Vienna, Reggio, Mirandola, Correggio (birth-place of the celebrated painter), Carpoli, and Rivoli, together with Massa and Carrara, and the former Imperial Fiefs, are united with the duchy of Modena proper to constitute one government; superficial extent of the whole, 2000 square miles; population, 375,000. The territory is fertile and well cultivated, the climate, in general, temperate and healthy, and the principal productions corn, rice, fruits, wine, oil, silk, honey, iron, marble, &c. The income of the state is about 1,500,000 florins; the armed force 2080 men. The ruling house is of the Austrian line of the house of Este (see *Este*); the government is absolute, and the administration is conducted by one minister and two secretaries; the Austrian civil code is in force. The present ducal house is descended from Cæsar of Este, a cousin (by a morganatic marriage) of the last duke of the former line of Este, which became extinct in 1598. The Pope Clement VIII. then took possession of Ferrara, which had previously formed a part of the Modenese territories, as a reverted fief of the papal see. In 1653, Correggio was added to the duchy by grant of the emperor of Germany, Mirandola, in 1710, and Novellara, in 1737. Hercules III. (died in 1803) married the heiress of the duchy of Massa-Carrara, and left an only daughter, who was married to Ferdinand, archduke of Austria, brother of Leopold II. In 1796, the French took possession of the country, and it was included in the Cisalpine republic, and afterwards in the kingdom of Italy. The present duke Francis IV., the son of the archduke Ferdinand, is prince of Hungary and Bohemia, and archduke of Austria. He was born in 1779, and, in 1812, married a daughter of the king of Sardinia. In 1814, he entered into possession of the estates of his grandfather, by virtue of a reversionary investment conferred on his father by the emperor, and his claims were confirmed by the congress of Vienna. He assumed the name of Este, and thus became the founder of the Austrian line of Este. His mother also entered upon the government of the duchy of Massa-Carrara, which she inherited from her mother, and to which the congress annexed the fiefs in the Lunigiana: on her death, in 1829, these passed to her son. The house of Modena-Este also holds the rich *fideicommissa* (see *Fideicommissum*) of the house of Obizzi, in Treviso. The present duke has a son, born in 1819, and two brothers. In consequence of the arbitrary character of the duke's government, an insurrection was organized, and the citizens of Modena, Reggio, Massa-Carrara and other places took arms, with the purpose of extorting from their rulers a more liberal form of government, in February, 1831. The duke was obliged to flee; but in March the Austrian troops entered Modena, at the request of the duke, and restored the authority of the government.

MODENA *(Mutina)*; capital of the duchy of the same name, situated in a fertile plain, on the canal of Modena, which unites the Secchia and the Panaro, twenty-three leagues from Florence, thirty-six from Milan; lat. 44° 38′ N.; lon. 10° 54′ E. It is the see of a bishop, and contains an old cathedral, at the foot of the tower of which hangs the bucket which was the subject of war between the Bolognese and Modenese, and of a mock heroic poem, by Tassoni, entitled *La Secchia Rapita* (the Rape of the Bucket), with a large number of churches. The ducal palace has a fine collection of pictures, and a good library of 80,000 volumes. There are also a university and other institutions, literary and charitable. The fortifications are inconsiderable; the population about 25,000. Natives, Sigonius, Muratori, Tassoni, Fallopius.

MODERN; that which belongs to recent times. The term *modern history* is used in different senses.

The Germans often date the end of modern history with the French revolution, and call the rest the *most recent history*. In the history of art, literature, customs, &c., *modern* is frequently used in contradistinction to *ancient* or *classical*. (q. v.) "Modern civilization," says A. W. Schlegel, "arose from the blending together of the elements of Northern origin and the fragments of antiquity." (See *Romantic*.) In science, *modern* is also used in contradistinction to *ancient*; thus we speak of *modern* philosophy.

MODILLION; an ornament resembling a bracket, in the Ionic, Corinthian, and Composite cornices. In Grecian architecture, however, the Ionic order is without modillions in the cornice, as are also the Roman examples of the same order, with the exception of the temple of Concord, at Rome, which has both modillions and dentils.

MODON (*mothone*); a strong city and port of the Morea, on the Mediterranean; lat. 36° 51′ N.; lon. 21° 40′ E. It is entirely surrounded by the sea, and connected with the main land by a wooden bridge. The port is unsafe, but important on account of its road and its proximity to the gulf of Coron. The city is small and badly built; the streets narrow and dirty. The Greeks became masters of it in the war of Grecian independence, and, in 1825, Miaulis burned a Turkish fleet in the road. Ibrahim Pacha took possession of Modon soon after his arrival in the Morea, but was compelled by the French to evacuate it in 1828. Previously to the war, the inhabitants amounted to about 7000. (See *Morea*.) In 1829, they did not exceed 500.

MODULATION, in music, is, in its most extensive meaning, the diversified and proper change of tones in conducting the melody, or the progression of tones in general, and the sequences of concords. In its narrower sense, *modulation* signifies that succession of tones by which a musical passage proceeds from one key into another. In quite short pieces, also in long compositions, in which the composition remains for some time in the principal tone before it passes to another, good modulation consists only in continuing for some time melody and harmony in the assumed tone, with proper changes and variety, and at last concluding in that tone. For this it is requisite that, at the very beginning, the concord should become distinctly perceptible by the sound of its essential tones, the octave, fifth, and third; and further, that the melody, as well as harmony, should be carried through the tones of the assumed scale, and that no tones foreign to it should be heard, either in the melody or in the harmony. A variety of concords, nevertheless, is necessary, that the ear may enjoy the necessary variety. The composer ought not, after the fashion of some contracted harmonists, to dwell always on two or three concords, or repeat them in transpositions, much less to return and conclude in the principal tone before the piece or the first strain is finished. The rule to let only those tones be heard which belong to the assumed scale is to be understood thus,—that a tone foreign to the scale ought to be used merely in passing, and to be left again immediately; thus, for instance, in the scale *C* sharp, one could certainly go through *G* sharp into *A* flat, and through *F* sharp to the dominant, and from this back again to the principal tone, without violating, by these two tones, foreign to the fundamental tone, *C* sharp, the effect of this scale, or destroying it. It is only necessary to avoid tones totally foreign to the scale of *C* sharp; as, for instance, *C* sharp or *D* sharp. The second kind of modulation, or that which is so called, in a more restricted sense, requires more knowledge of harmony, and is subject to greater difficulty. It consists in the art of giving to longer pieces the necessary variety, by more frequent change of tones, and requires a knowledge of the relation among the various keys, and of the tones connecting them. As it is indispensable, in longer pieces, to carry melody and harmony through several keys, and to return at last to the fundamental, it is necessary, in respect to such modulation, duly to consider the character of the composition, and, in general, whether the modulation has merely in view a pleasing variety, or whether it is intended to serve as the support of a grand and bold expression. Considerations of this kind give to the composer the rules for particular cases, and show where he may depart widely from the principal tone, and where he may remain near it; where he may thus depart suddenly, and perhaps with some harshness, and where his departures ought to be slow and gradual; because such departures are the most important means of musical expression. In pieces of a mild and quiet character, it is not permitted to modulate so often as in those which have to express violent and great passions. Where every thing relating to expression is considered, modulation also must be so determined by the expression that each single idea in the melody shall appear in the tone which is most proper for it. Tender and plaintive melodies ought only to dwell upon the flat tones, while the lighter sharp tones, which must be touched in the modulation, on account of the connexion, ought to be left immediately afterwards. It is one of the most difficult parts of the art to remain steadily without fault in a modulation. It is therefore to be regretted that those who write on the theory of the art, dwell so little on this important subject, and believe themselves to have done enough, if they show how the composer may gracefully leave the principal tone, pass through the circle of all the twenty-four tones, and return at last to the first tone. Piccini had the best views of modulation. "Modulating," he says, "is to pursue a certain path. The ear will follow you; nay, it wishes to be led by you, yet upon condition that, after you have led it to a certain point, it shall find something to reward it for its journey, and to occupy it for some time. If you do not consider its claims, it suffers you to go on, at last, without regard, and every endeavour to attract it again is but lost labour." To conduct a melody according to a given modulation; never to deviate from it, except for good reason; and in the right time to return to it in the proper way, and without harshness; to make use of changes in the modulation only as means of expression, and, perhaps, for the necessary variety,—such are the real difficulties of the art; while to leave immediately a key which has hardly been perceived, to ramble about without reason or object; to leap about because the composer does not know how to sustain himself; in one word, to modulate in order to modulate, is to miss the true aim of the art, and to affect a richness of invention in order to hide the want of it.

MODULE; an architectural measure; the lower diameter of a column being divided into two parts, one is a module; and each module is divided into thirty minutes; thus neither is a determinate, but a proportionate measure. The term is also sometimes used with reference to the different sizes of medals.

MŒLLENDORF, Richard Joachim Henry, count von, a Prussian general, born in 1724, was educated at Brandenburg, and, in 1740, admitted among the pages of Frederic II., whom he accompanied in the first Silesian war, and was at the battles of Molwitz and Chotusitz. His behaviour procured him promotion, and, in 1746, he obtained a company in the guards. He served at the siege of Prague, in 1757, and at the battle of Rossbach and that of Lenthen; for his conduct on which last occasion, he was rewarded with the order of merit. He was made a colonel in 1761, afterwards lieutenant-general, and, in 1783, governor of Berlin. In the reign of Frederic William II., he was appointed general of infantry, and commanded the Prussian troops employed in 1793, in the disgraceful dismemberment of Poland, on which occasion Mœllendorf did every thing in his power to alleviate the misfortunes of the Poles. On his return home, he was created a field-marshal, and, soon after, made governor of South Prussia. He opposed the war with France which followed; but he succeeded the duke of Brunswick in the command of the Prussian army on the Rhine, in 1794, when he gained the victory of Kaiserslautern. He was one of the principal advisers of the treaty of Basle, in 1797, after which he was made grand-marshal. Not being able to prevent, by his advice, hostilities with France, in 1806, though far advanced in years, he accepted a command, and, joining the army of the duke of Brunswick, was present at Jena and Auerstadt, where he was wounded. He retired to Berlin, and, subsequently to Havelberg, where, according to an odd Prussian usage, he held a prebend in the ecclesiastical chapter. He died there, Jan. 28, 1816.

MŒRIS; a lake of Egypt. According to Herodotus, with whose account Diodorus and Mela agree, it was, in his time, 3600 stadia, or 450 miles in circumference, and about 300 feet deep. He states it to have been entirely the product of human industry. Modern travellers describe it as at present about thirty or forty miles long and six broad, and assert it to be a natural basin. The works, therefore, which Herodotus attributes to king Mœris, must have been the canals which connected the lake with the Nile, and the mounds, dams and sluices which rendered it subservient to the purposes of irrigation. See the works of Pococke, Denon, Belzoni, &c., on Egypt.

MŒSIA; a country lying north of Thrace and Macedonia, and south of the Danube, corresponding to the modern Servia and Bulgaria. It was at a remote period inhabited by Scythians, with whom the Getæ were afterwards united. The country was conquered by the Roman emperors. The barbarians early conquered this region, and it remained in the hands of Sclavonians and Bulgarians. See *Servia*, and *Bulgaria*.

MŒSOGOTHS. See *Goths*.

MOGADOR, or MAGADORE (called by the natives *Suera*, or *Suerrah*); a seaport of Morocco, 100 miles west-south-west of Morocco; lon. 9° 20′ W.; lat. 31° 30′ N.; population, according to Jackson, 10,000; to Robins, 30,000. It was founded in 1760, by Sidi Mohammed, who spared no pains to make it the principal seat of commerce in the empire; and most of the commerce between Europe and the empire of Morocco is carried on through Mogador. It is built in a low, flat desert of accumulating sand, which separates it from the cultivated country. Supplies are brought from gardens from four to twelve miles distant. The town has a beautiful appearance from the sea, the houses being all of stone and white; but the streets, though regular and straight, are narrow and dirty, and the houses present a mass of dead wall. The houses of the foreign merchants are spacious. The roofs are flat, and the terraces serve as a walk in the evening. It consists of two parts, one of which may be called the citadel, containing the custom-house, treasury, residence of the alcaide, and the houses of the foreign merchants. The Jews, who are not foreign merchants, reside in the outer town. The harbour is about two miles in circuit; but, as the water, at ebb-tide, is only ten or twelve feet deep, large ships must anchor one and a half-mile distant from the battery. The exports consist of almonds, gums, bees-wax, goat-skins, olive oil, ostrich feathers pomegranate-peels, and dates. See *Morocco*.

MOGREBBINS; Arabs of the western part of Egypt. Many of them are found at Cairo, and are distinguished for their industry.

MOGUL. See *Mongols*.

MOHAMMED, the founder of a religion which has spread over a great part of the East, and has been productive of much good by the abolition of the worship of idols, was a scion of the Arabic line of Koreish, and the family of Hashem, celebrated in the country as the princes of the holy city of Mecca, and guardians of the kaaba. The date of his birth is placed with most probability in A. D. 569. Mecca was his native place. His grandfather, Abdul Motalleb, a rich and noble citizen, had thirteen sons. One of them, Abdallah, married Amira, and died while his son Mohammed, or Mahomet, was still a child. As he left little property, Mohammed was educated first by his grandfather, and, after his death, by his oldest uncle, Abu Taleb. This uncle, a merchant, destined Mohammed for the same employment, and was accompanied by him on a commercial journey to Syria. On this occasion, he visited a Nestorian monastery, where he was especially distinguished by one of the monks, and received impressions which perhaps contributed to give the tone to his subsequent character. The Mohammedan writers are very prolix in their descriptions of the wonderful qualities of mind and body for which their prophet was eminent from his youth; he shared, however, the general ignorance of his countrymen. His uncle had recommended him as agent to a rich widow, named Khadijah, and he acquitted himself so much to her satisfaction, that she married him, and thus placed him in easy circumstances. She was fifteen years older than he, but, from gratitude or prudence, he lived with her in happy and faithful wedlock, and, till her death, restrained the sensual appetites which he afterwards indulged. He was still a merchant, and made a second journey to Syria, where he again had interviews with the Nestorian monks. He seems to have had, from his youth, a propensity to religious contemplation, for he was every year accustomed, in the month Ramadan, to retire to a cave near Mecca, and dwell there in solitude. At what time the idea of a new religion came into his mind, whence, in the midst of an idolatrous people, he derived the conviction of the unity of God, and to what degree he blended the ambition to assume the prophetic character with the struggle for personal aggrandizement, are questions to which only conjectural answers can be given. That an untaught Arab should conceive elevated views of the state of man in his age, and found on them comprehensive projects, is not credible: in all probability, his first plans were limited to his countrymen. That he was honest in his zeal to abolish idolatry, and disseminate a purer doctrine, although he sought to obtain this object by deception, may be easily believed, if we remember the many examples of a similar inconsistency in other legislators and religious reformers.

Mohammed began his pretended mission A. D. 609, in the fortieth year of his age. He first converted his wife Khadijah, to whom he communicated the particulars of an interview with the angel Gabriel, by whom he was declared an apostle of God. Through her instrumentality, her uncle or cousin Waraka was gained, who is said to have been a Christian, and well acquainted with the Old and New Testaments. These were followed by Mohammed's servant, Zeid, to whom he gave his freedom, and by his young nephew, the fiery Ali. Of great importance was the accession of Abubeker, a man of estimable character, who stood in high respect, and persuaded ten of the most considerable citizens of Mecca to follow his example. They were all instructed by Mohammed in the doctrines of the *Islam*, as the new religion was styled, which were promulgated as the gradual revelations of the divine will, through the angel Gabriel, and were collected in the Koran. Three years passed in the quiet dissemination of his doctrines: in the fourth, Mohammed invited his relatives of the family of Hashem to an entertainment, openly announced to them his prophetic mission, and asked which of them would undertake the office of his vizier. All were silent, till the youthful Ali declared his readiness to do so, and, at the same time, his resolution to inflict vengeance on all who should dare to oppose his master. In vain did Abu Taleb, the father of Ali, dissuade them from the undertaking. But, although he remained himself unconverted, he did much to promote the new doctrines, by protecting Mohammed against his enemies, and affording him refuge in times of danger. On several occasions Mohammed was attacked by the adherents of idolatry with open force, and compelled to change his residence; but he often had the satisfaction of converting his bitterest enemies. In the tenth year of his prophetic office, he suffered a severe loss in the death of Abu Taleb and his faithful Khadijah. Deprived of their assistance, he was compelled to retire, for a time, to the city of Tayef. On the other hand, he was readily received by the pilgrims who visited the kaaba, and gained numerous adherents among the families in the neighbourhood. At this time occurred Mohammed's famous nocturnal journey to heaven on the beast Alborak, under Gabriel's guidance, respecting which the Koran contains some obscure intimations. In the twelfth year, the Islam was also spread among the inhabitants of Medina (Yathreb), several of whom swore fidelity to the prophet, and proffered their assistance. Mohammed now adopted the resolution of encountering his enemies with force. Only the more exasperated at this, they formed a conspiracy to murder him: warned of the imminent danger, he left Mecca, accompanied by Abubeker alone, and concealed himself in a cave not far distant. Here he spent three days undiscovered, after which he arrived safely at Medina, but not without danger. This event, from which the Mohammedans commence their era, is known under the name of the *Hegira*, which signifies *flight*. In Medina, Mohammed met with the most honourable reception: thither he was followed by many of his adherents. Mohammed now assumed the sacerdotal and regal dignity, married Ayesha, daughter of Abubeker, and, as the number of the faithful continued to increase, declared his resolution to propagate his doctrines with the sword. The hopes of booty added new fervour to the religious zeal of his partisans. Their first great military exploit was the spoiling of a rich caravan, led by Abu Sophian, the chief of the Koreishites, with a strong guard. Mohammed surprised them, with an inferior force, in the valley of Beder, and inflicted on them a total defeat. He took a rich booty, and a number of prisoners. Other successful enterprises followed; but, in the third year of the Hegira, Abu Sophian, with 3000 soldiers, attacked Mohammed with 950, on mount Ohud, not far from Medina. A desperate conflict ensued, in which the Moslems were utterly beaten, and the wounded prophet hardly saved his life. This misfortune naturally shook the authority of him whose pretended mission from God should have secured him the victory. But by attributing the fault to the sins of the Moslems, by promising the slain a paradise provided with all sensual enjoyments, and inculcating an unconditional predestination, he succeeded in restoring his tottering credit. Good need had he of it in the following year, 625, when Abu Sophian appeared before Medina with 10,000 men. Mohammed prudently limited himself to the defensive; but the enemy raising the seige, after twenty days, on account of internal discord, Mohammed, under the pretence of a divine command, led his party against the Jewish race of Koreidha, who had made common cause with the enemy. After twenty-five days, the Jews were compelled to surrender their chief fortress to the will of the conqueror, who took the most bloody revenge, slaughtered between 600 and 700 men, and carried away the women and children into captivity. Some years afterwards, he also took Khaibar, the principal seat of the Jewish power in Arabia, by which means he completed the subjugation of this unhappy people. It is probable that the many murders and cruelties practised on his enemies were sufficiently justified in the eyes of his followers, by his divine mission; but they must have been highly offended by the violation of all right and decency, of which he was guilty in his passion for Zeinab, the wife of his emancipated slave and adopted son Zeid, while a particular chapter was introduced into the Koran, to give him power to marry her; this he did publicly, without regard to a degree of relationship which the Arabs had hitherto held inviolable. This weakness, with respect to the female sex, increased with the years and authority of Mohammed. Besides the numerous wives, whom he took at different times, he indulged in several transient amours, such as are forbidden in his own laws, and always justified his incontinency by new chapters in the Koran. That such shameless pretences could have any effect rather proves the credulity and fanaticism of the people than his own talents of deception. At the same time, his doctrines and authority gained ground among the neighbouring tribes. The expeditions of his officers rarely failed to produce a considerable booty. He was himself almost worshipped by his partisans. His views, meanwhile, continued to expand, and, in the seventh year of the Hegira, he sent a summons to the principal neighbouring princes, particularly Chosrou Parviz, king of Persia, Heraclius, emperor of Constantinople, Mokawkas, ruler of Egypt, the king of Ethiopia, and the princes of various districts of Arabia, to embrace the new revelation of the divine law, made through him. The manner in which this embassy was received differed according to the power and pride of those to whom it was directed. The more remote and powerful gave no heed to it: on the contrary, the weaker and nearer, who were informed of his increasing power, had cause to fear his arms. It was of particular importance to him no longer to be an exile from Mecca, the holy city, which was in a high degree the object of the adoration of the Arabs. He appeared, therefore, at the head of 1400 men, with the ostensible purpose of peaceably visiting the temple of Mecca. The Koreishites opposed his entrance, and compelled him to a treaty in the seventh year of the Hegira. For three days only, he and his partisans were to be allowed to pay their devotions, unarmed, in the kaaba; on the fourth day, he was to withdraw. He succeeded, however, on this occasion, in converting three persons of influence among the Koreishites, who had afterwards still greater renown among the Moslems—Caled, Amru, and Othman. In the eighth year of the Hegira, a Mohammedan army, under Zeid's command, advanced against the city of Muta, in Palestine, where the governor of the emperor Heraclius had murdered a Moslem ambassador. Zeid was slain, and the defeat of the Moslems was prevented solely by the courage of Caled, who, on this occasion, obtained the appellation of "sword of God." A breach of compact on the part of the Koreishites gave Mohammed the desired opportunity to lead against Mecca 10,000 well-armed soldiers, inspired by pious zeal. The terrified Koreishites made little resistance, and received life and liberty only on condition that they embraced the Islam. The idols of the kaaba were demolished, but the sacred touch of the prophet made the black stone again the object of the deepest veneration. The temple became the principal sanctuary of the religion of Mohammed, and its professors alone are allowed access to the holy city of Mecca. This important event took place in the eighth year of the Hegira. The destruction of some celebrated idols, and the subjugation of various Arab tribes, now employed the Moslem arms. In the valley of Honain, not far from Mecca, where Mohammed incurred great personal danger, he achieved the victory only by the utmost exertions. The following year the Mohammedans call the "year of embassies," because a number of Arab tribes announced by deputies their submission and conversion. At the head of 30,000 men, among whom were 10,000 cavalry, Mohammed was resolved to anticipate the hostile plans of the emperor Heraclius. He marched into Syria to Tabuk, half way to Damascus, but returned to Medina, and contented himself with summoning the emperor in writing to embrace his doctrines. After his return, he promulgated a new chapter of the Koran, revoked all regulations in favour of idolaters, and declared all the compacts concluded with them null. He might now be regarded as master of the whole of Arabia, although all the inhabitants had not yet received his religion. He allowed the Christians a free exercise of their worship on the payment of a tribute. In the tenth year of the Hegira, Mohammed undertook his farewell pilgrimage to Mecca. On this occasion, he was surrounded with the utmost splendour, and attended by 90,000, or, as some say, 150,000 friends. This was the last important event of his life. He died soon after his return to Medina, in the arms of his wife Ayesha, in the eleventh year of the Hegira, in his sixty-third year. Of all his wives, the first alone bore him children, of whom only his daughter Fatima, wife of Ali, survived him.

The Mohammedan writers undoubtedly exaggerate the corporeal and mental endowments of their prophet: it is, however, very credible, that there was a prepossessing majesty in his appearance, and that he united much natural eloquence with a decisive and enterprising mind. By these gifts, he succeeded in exalting himself above his equals, and gaining confidence and popularity. Compared with his countrymen, he stands pre-eminent; compared with other legislators and monarchs, he holds but an inferior rank. Whether he himself believed what he promulgated as a divine revelation is a hard question to answer. Most probably he ought to be regarded as a religious enthusiast, who deemed himself actually inspired by the Divinity, but was not so entirely blinded as to overlook the means of making his doctrines acceptable to the people, and of confirming his dominion over their minds. Thence the fabrication of his interview with the angel Gabriel; thence his visionary journey through the seven heavens of paradise; thence his indulgence of the sensual desires of a sensual people. The first tenet of his creed was, "Allah alone is God, and Mohammed is his prophet." At the same time, Moses and Christ were regarded, in his system, as divinely inspired teachers of former times, and he by no means denied the authenticity of the sacred histories and revelations of ancient Judaism and Christianity, which he only believed to be corrupted. The paradise which he promised to his faithful adherents was a heaven of sensual pleasure; he himself perhaps anticipated no other. His morality was compiled from the ancient Jewish and Christian systems. The faithful adoration of Allah as the only God, unwavering obedience to the commands of the prophet, the necessity of prayer, charity to the poor, purifications, abstinence from forbidden enjoyments (especially from strong drinks—this prohibition was caused by the quarrels that arose among his adherents), bravery, upholding even to death the cause of God, and entire resignation to unavoidable fate, are the chief points of his moral system. Of solemnities, fasts, and usages such a religion for a sensual people could not be destitute; but the injunction of a pilgrimage to Mecca and Medina was unquestionably a political measure, in order to sanctify for ever the original seat of the Islam, and to secure permanently the political and religious importance of Arabia. These doctrines are contained in the Koran, to which was soon after added a second collection,—*Sunna* (second book of the rules of life, founded on Mohammed's example.) But all Mohammedans do not receive the latter: those who do, are therefore called *Sunnites*. One of the principal means of the rapid and extensive diffusion of his doctrines and dominion was force, all who did not submit of their own accord being compelled to do so at the edge of the sword. Rarely do we find in his history any traces of his having made use of women for promoting his plans, although he allowed polygamy, with some restrictions, and concubinage without any bounds. That he persuaded his first wife that the attacks of epilepsy which he had were celestial trances, and that she first procured him adherents by the propagation of this fable, seems to be a tale, devised by his Christian opponents, to expose the prophet to contempt. Certain it is that he himself declared he did not work miracles. His disciples, nevertheless, ascribe to him the most absurd miracles; for example, that a part of the moon fell into his sleeves, and that he threw it back to the heavens; that stones, trees, and animals proclaimed him aloud to be the prophet of God, &c.; but of such fables we find abundance in the legends of the Christian saints. In a moral view, he can never be compared with the divine Founder of Christianity. His system has been widely propagated in Asia and Africa. The reverence which the faithful Moslems pay to the prophet, and all that is connected with him in the remotest degree, is as great as the reverence of relics has ever been in Christendom; thus, for example, the camel which carries the Koran to the kaaba, and, in the territory of Mecca, an enormous number of doves, which must not even be scared from the fields, much less be killed, because they are thought to be descended from the dove that approached the ear of Mohammed, are objects of the most sacred reverence. But the wonder-loving populace alone gives credence to the fable that Mohammed's coffin is suspended in the air: on the contrary, he lies buried at Medina, where he died, and an urn, enclosed in the holy chapel, constitutes his sepulchre, which is surrounded with iron trellis work, and is accessible to no one. The (so called) *Testament* of Mohammed is a spurious work of later times. Mohammed's doctrines have given rise to many sects, among which the Sunnites and Shiites, the chief ones, still entertain the most violent mutual hatred among the Persians and Turks. See *Hist. of Mohammedanism*, &c., by Charles Mills; also the articles *Koran*, and *Islam*.

MOHAMMED II., Turkish emperor, surnamed Bujuk, the Great, born at Adrianople in 1430, succeeded his father, Amurath II., in 1451. He renewed the peace made by his predecessor with the Greek emperor, but resolved to complete the conquest of the enfeebled Greek empire by the capture of Constantinople. The Christian powers in Europe remained quiet spectators. April 6, 1453, Mohammed appeared before Constantinople, to which he laid siege with an army of 300,000 soldiers, and by water with 300 galleys and 200 small vessels. The besieged had drawn strong iron chains before the harbour, and made a brave resistance, though they had but about 10,000 men to oppose so great a force. But Mohammed, having contrived to get a part of his fleet over land into the harbour, and caused a bridge of boats to be constructed and occupied with cannon, the Greeks were overcome, after a defence of fifty-three days, and the empire came to its end. The city was taken by storm on the 29th May, and abandoned to pillage. The emperor Constantine Palæologus fell, at the commencement of the assault, sword in hand. In a few hours, the conquest of the city was completed. The conquerors gave themselves up to all cruelty and excess. During the sack, a young princess, named Irene, was brought to Mohammed, and for three days he compelled her to satisfy his passion. Some janizaries murmured, and a vizier even dared to reprove him. Mohammed immediately sent for the captive, took her by the hair, and murdered her before the discontented, with the words, "Thus Mohammed deals with love." When he entered the city, he found it desolate; but as he designed it for the principal seat of his empire, he strove to attract new inhabitants by promising the Greeks full religious liberty, and permitting them to choose a new patriarch, whose dignity he himself increased. Constantinople under him soon became again flourishing. He restored the fortifications, and, for greater security, caused the forts called the *Dardanelles* (q. v.) to be erected at the mouth of the Hellespont. Mohammed pursued his conquests, which were checked for a time by Scanderbeg, prince of Albania, who was favoured by the mountainous character of the country. The sultan finally concluded peace with him, but after Scanderbeg's death, in 1466, soon subjugated all Albania. His further advances into Hungary were prevented by the celebrated John Hunniades, who obliged him, in 1456, to raise the siege of Belgrade, in which he had lost 25,000 men, and had been himself severely wounded. The son of the great Hunniades, king Matthias Corvinus, also kept the Turks from Hungary, and even took from them Bosnia. On the other hand, Mohammed conquered, in a short time, Servia, Greece, and all Peloponnesus, most of the islands of the Archipelago, and the Greek empire of the Comneni, established in the beginning of the thirteenth century, at Trebisond, on the coast of Asia Minor. The Christian powers began to be apprehensive of the progress of his arms, and at the instigation of pope Pius II., in 1459, a crusade against the Turks was resolved upon at Mantua, which was never, however, executed, on account of the bad constitution of most of the European states. From the republic of Venice Mohammed tore Negropont, in 1470. He also stripped them of other possessions, and took Caffa from the Genoese, in 1474. Frequent wars with the Persians prevented the further prosecution of his enterprises against the Christian powers. In 1480, he attacked the island of Rhodes, but was repulsed by the knights with great loss. He now turned his arms against Italy, took Otranto, and would probably have pursued his conquests in this country but for his death, in 1481, on an expedition against Persia. During his reign of thirty years, he had conquered twelve kingdoms and upwards of 200 cities. On his tomb he ordered the words to be affixed, "I would have taken Rhodes and conquered Italy," probably as a stimulus to his successors. His character was distinguished by talents, ambition, courage, and fortune, and disgraced by cruelty, perfidiousness, sensuality, and contempt of all laws. He spoke Greek, Arabic, and Persian; understood Latin; drew and painted; had a knowledge of geography and mathematics, and of the history of the great men of antiquity. In short, he would have been a hero, had not his cruelties blackened his reputation. Policy sometimes kept in check the impetuosity of his character; but he was too often the slave of passions, though all the cruelties ascribed to him are not to be credited.

MOHAMMED IV., born in 1642, was raised to the throne while a boy of seven years, his father, Ibrahim, having been murdered in an insurrection of the janizaries. His grandmother, an ambitious woman, managed the government, but perished in a revolution of the seraglio. The celebrated grand-vizier Mohammed Kuperli (or Kuprili) was now placed at the head of the government. To this great minister, and to his equally great son and successor, the Turkish empire was indebted for the consequence which it maintained till the end of the seventeenth century. Mohammed was himself an insignificant personage, whose principal passion was the chase. Kuperli turned his chief attention to the restoration of the internal tranquillity of the empire, to which he sacrificed a great number of persons. The war begun in 1645 against the Venetians, mainly respecting the island of Candia, was, therefore, but weakly prosecuted. But, in 1667, Achmet Kuperli, one of the greatest Turkish generals, undertook the famous siege of this island (see *Candia*), which lasted two years and four months. The capitulation was signed September 5, 1669, at the same time with the terms of peace between Venice and the Turks. A war had already broken out (1660) with the emperor Leopold, on account of Transylvania. The Turks had made considerable progress in Hungary, when they were totally defeated, August 3, 1664, by Montecuccoli, at St Gothard. Nevertheless, to the astonishment of all, the emperor accepted the disadvantageous truce of Temeswar, of twenty days, proffered by the Turks. Never had the Turks approached so near the boundaries of Germany as now. The anarchy which prevailed in Poland under king Michael, and the disturbances of the Cossacks, gave occasion, in 1672, to a war of the Turks against Poland, which had to purchase peace on ignominious conditions. But the great Polish general John Sobieski revenged the ignominy of his nation by a decisive victory at Choczim, in 1673, and, in 1676, obtained from the Turks an honourable peace. Sobieski also contributed most essentially to the relief of Vienna, which was besieged for more than six weeks by the grand vizier Kara Mustapha, with 200,000 men, in the war caused, in 1683, by the malcontents in Hungary. The Turks were attacked in their camp, September 2, by the allied Christian army, and defeated, with extraordinary loss. The grand-vizier atoned for his ill success with his life. The emperor, Poland, Russia, and Venice, now concluded an alliance against the Turks, who suffered losses in every quarter:—for example, they were utterly defeated at Mohacz by Charles, duke of Lorraine. As all these misfortunes were attributed to the effeminacy and inactivity of the sultan, Mohammed IV., he was deposed in 1687, and died, in prison, in 1691.

MOHAMMED ALI (also MEHEMMED ALI) Pacha, viceroy of Egypt, is of Turkish origin, and was born at Cavala, in Macedonia, in the year 1769. His life, like that of his contemporary, Mahmoud II., is so intimately connected with the modern history of the East, that we shall here take a brief view of it, although death has not yet marked out the limits of his career. By his boldness, sagacity, and courage, he has raised himself from an humble station to that of a sovereign, before whom Arabia and Nubia tremble, and who is flattered by his proud master, the Porte. He has ruled Egypt, since 1806, on European principles. From his youth, Mohammed exhibited an extraordinary penetration, uncommon dexterity in all bodily exercises, and a fiery ambition. The Turkish governor at Cavala gave this poor young orphan a common education, and then an office and a rich wife. Reading and writing he learned after he had become a pacha. A merchant of Marseilles, named Lion, who lived in Cavala, and was his patron, inspired him with an inclination towards the French, and with religious tolerance. On this account the residence of strangers in Egypt has been facilitated. In 1820, the viceroy gave the family of Lion proofs of his gratitude. His first employment was the tobacco trade, and he is now engaged in great commercial enterprises, extending even to India. His first campaign was in Egypt, against the French (1800), as commander-in-chief (*binbashi*) of the contingent of Cavala. The capitan pacha, who was a witness of his bravery in the battle of Rahmanieh against general Lagrange, elevated him to a higher post, in which he also acquired the favour of the Albanian troops. He established his reputation as a soldier in the long contest of the pachas with the mamelukes, after the French had abandoned Egypt in 1802; but soon after the governor became jealous of the ambitious Mohammed, and, to get rid of him, obtained his appointment as pacha of Saloniki. Mohammed's influence was already so great, that the inhabitants of Cairo took arms in his favour, and the ulemas and sheiks represented by agents to the divan of Constantinople, that Mohammed alone was able to restore order and tranquillity to Egypt, which the governor Khurschid Pacha plundered and oppressed. At the same time, they conferred on him the office of governor; but the prudent Mohammed refused the external dignities of the office, although in secret he directed affairs. At length the Porte (April 1, 1806) confirmed him as governor of Egypt, and elevated him to the rank of a pacha of three tails. He maintained himself in this office by the attachment of the Albanians and the influence of France, when the Porte had been prevailed on by the British to appoint, in his stead, the mameluke Elfy Bey, governor of Egypt. Mohammed soon restored the distracted country to order, accustomed the undisciplined troops to obedience, and compelled the British, who, in March, 1807, had occupied Alexandria, after several battles, to leave Egypt in September. He then reduced the mameluke beys to subjection, and, in March, 1811, on a festive occasion, perfidiously murdered 470 of them; the rest were decapitated. They were accused of secret plots. The French mamelukes alone remained unmolested. (See *Mamelukes.*) From this time tranquillity reigned in Egypt. The campaign of Ibrahim Pacha, the second son of the viceroy (the first died in the field), against the Wahabees, in 1816, had a successful issue; he deprived that sect of Mecca and Medina, conquered their capital, Derayeh, in 1818, and sent their leaders prisoners to Constantinople. The expedition to Nubia and Sennaar, in 1821, which the French traveller Cailliaud (see *Meroë*) accompanied, in the expectation of discovering gold mines, ended with the murder of the leader, Ismael Pacha, the youngest son of the viceroy. At the same time Mohammed directed the internal administration of affairs. Armies and fleets, fortifications, and the maintenance of the troops were established upon the European plan; telegraphs and Congreve rockets were prepared; the ulemas were transformed into paid officers; agriculture was extended, the races of sheep and horses improved; commerce and manufactures flourished; Europeans were protected and rewarded, and learned travellers encouraged. Ismael Gibraltar and others were sent, in 1818, to Europe, in order to form alliances; the canal of Mahmoud was dug, connecting Cairo with Alexandria; olive and mulberry trees, hitherto unknown in Egypt, were planted, sugar refineries, and saltpetre manufactories, and cannon founderies established, quarantine rules and vaccination introduced, schools founded, &c.—The British, French, and other nations now sought the friendship of Mohammed. The Porte was terrified at his power, as he had, during the struggle with the Greeks, established himself in Candia. He was, however, appointed commander-in-chief against the Greeks in 1824; but he sent his son Ibrahim, at the head of an army of 16,000 men, together with a fleet under the command of Ismael Gibraltar, who was to conquer the Morea, and establish a negro colony there. The latter, with a capudan pacha, was defeated in several naval actions, in September, 1824, by the Greek admiral Miaulis, and Canaris, the commander of the fire-ships; but a second Egyptian expedition, succeeded, in March, 1825, in effecting a landing at Modon, and captured Navarino, Tripolizza, and other places. Ibrahim then laid waste the Morea, and sent its inhabitants as slaves to Egypt. In October, 1827, a third expedition of the viceroy was blockaded in the harbour of Navarino by the British admiral Codrington and the French admiral De Rigny, in consequence of the treaty of July 6, 1827, and it was required of the viceroy by the allied powers, that he should refrain from every act of hostility towards Greece. The combined Turkish and Egyptian fleets were shortly after destroyed at this place. See *Navarino.*

Mohammed is, in reality, the sovereign of Egypt, though he preserves the external marks of respect towards the grand seignior. He is a despot, and is obliged to be so; but at the same time he possesses political knowledge, and often exhibits magnanimity. He is the absolute lord of the soil and all its productions. He holds the monopoly of the productions of Egypt, and of the East India goods which pass through Egypt; only a few houses, designated by himself, are permitted to take part in the commerce.

The purchase of ships of war in France, and his expeditions against the Morea, exhausted his treasures, and caused oppressive taxes. In Egypt, he protects the Greeks as well as the Franks; he causes young Turks to be educated in England and France in the European manner; the Christians possess his confidence, but there is no security for the permanence of his plans. Ibrahim himself appears not to approve of his father's projects of colonization and civilization. Had Mohammed Ali never been stained with treachery and murder, he would perhaps deserve to be called the second Saladin of Egypt.—See Mengin's *Histoire de l'Egypte sous le Gouvernement de Mohammed Aly*, etc. (Paris, 1823, 2 vols.); *Histoire de la Régénération de l'Egypte* by Planat, a staff-officer in the pacha's service (Geneva, 1830); the travels of Madden, Lushington, Hanniker, Minutoli, &c. Mohammed has a grandson, whom he is carefully educating, and two married daughters. (See the articles *Egypt*, *Nubia*, *Wahabees*, *Greece*, *Revolution of.*) In 1827, he had twelve regiments organized, clothed in uniform, and armed after the European manner, each regiment consisting of 4000 men. They were raised by impressment from the Arabs and peasantry.

MOHAMMED, Sheik; the founder of the famous sect of the Wahabees, who derive their appellation from Abd el Wahab, the father of Mohammed. For an account of him see the article *Wahabees*.

MOHAMMEDAN ERA. See *Epoch*.

MOHAWK; a large branch of the Hudson or North river of New York, which rises in the north-east part of Oneida county, about twenty miles north of Rome, to which place it runs nearly south, and then turns eastward towards the Hudson, which it enters by several mouths, between Troy and Waterford, after a course of about 135 miles. Its source is within a short distance of Black river, of lake Ontario; and from Rome it winds along through a deep valley, bordered in many places by high and broken hills, and in others by extensive and very valuable alluvial tracts. The stream of the Mohawk is unequal, with many breaks and rapids, and two considerable falls. With the aid of canals, the Mohawk is navigable from Schenectady to Rome; but it serves the purposes of navigation principally by feeding the numerous canals which cross it or range near its borders. It is remarkably well adapted for supplying water-power for all manufacturing purposes. The land on its borders is very rich. It is excellent for wheat, and good also for all common purposes of agriculture.

MOHAWKS; a tribe of North American Indians, belonging to the confederacy of the Five (afterwards Six) Nations. (See *Iroquois*.) With the rest of the confederacy, they adhered to the British interest during the war of the revolution, and left the country, on its termination, for Canada, where lands were assigned them on the Grand river. Their village is composed of houses built of logs, with few of the conveniences of civilized life. The Mohawks lived originally on the river which still bears their name, and were remarkable for their courage and ferocity. Brandt was a Mohawk chieftain.

MOHICANS, or MOHEGANS; a tribe of Indians formerly occupying the western parts of Connecticut and Massachusetts. See *Iroquois*.

MOIDORE, or MOED'OR, or MOEDA; a gold coin formerly used in Portugal (from 1690—1722) of the value of six dollars.

MOINES, Des, the largest western tributary of the Mississippi above the Missouri, enters the Mississippi in about lat. 40°. It is 150 yards wide at its mouth, and is supposed to be 800 miles long, and navigable for boats for 300 miles.

MOIRA, Earl of. See *Hastings, Francis*.

MOITTE, Jean Guillaume, a French statuary, was born at Paris, in 1747, of a family which produced several distinguished engravers and architects, and early displayed so much talent for drawing, that Pigalle, then the most eminent sculptor in Paris, requested that he might receive the young artist as a pupil. In 1768, Moitte went to Italy, and studied the remains of ancient art, without, however, neglecting the study of nature. He returned to France in 1773, was one of the first members of the national institute, received the cross of the legion of honour from Napoleon, and died in 1810. His works are distinguished for correctness of design, elevated conception, beauty of proportion, variety of expression, and delicacy of taste. A statue of a *sacrificateur* (1783); the bass-reliefs of several of the barriers of Paris; that of the frontispiece of the Pantheon, representing the country crowning the civic and warlike virtues (destroyed after the restoration, when the Pantheon was consecrated as the church of Geneviève); that for the tomb of Desaix; several bas-reliefs in the Louvre, representing the muse of history, with Moses and Numa; warriors devoting themselves for their country, in the chamber of peers—are among his principal productions.

MOLA, Peter Francis, an eminent painter, was born at Coldra in 1621, or at Lugano in 1609. He was the pupil of the cavalier D'Arpino and of Albani. On leaving the last master, he went to Venice, and studied under Guercino, perfecting himself in colouring from the productions of the Venetian school. On his return to Rome, he painted several scriptural pieces for popes Innocent X. and Alexander VII., of which that of Joseph discovering himself to his brothers, in the Quirinal, is the most esteemed. He is still more distinguished as a landscape painter, for his varied composition and vigorous touch. In 1665, he received an invitation to the court of Louis XIV., with which he was about to comply, when a sudden disorder carried him off. There was another *Mola* (*John Baptist*), said by some to be his brother, who acquired some reputation in history and landscape; but he is much inferior to the preceding.

MOLAI, James de, the last grand-master of the order of the knights Templars, of the family of the lords of Longwic and of Raon. He was admitted into the order about 1265, and, on the death of William de Beaujeu, was unanimously elected to the office of grand-master. The wealth and power of the Templars, their pride and their dissolute manners, created them a multitude of enemies, and led to their destruction. In 1307, an order was issued for the general arrest of the knights throughout France. They were accused of heresy, impiety, and other revolting crimes. Fifty-seven were burned in 1311, and the order was abolished the following year, by the council of Vienne. Molai, with his companions, Guy Dauphin of Auvergne and Hugh de Peralde, was detained in prison at Paris till 1313, when their trial took place before commissioners appointed by the pope; and, confessing their crimes, they were condemned to perpetual seclusion. Molai and Guy, having subsequently retracted their confessions, which they had made in the hope of obtaining their freedom, were executed as relapsed heretics. They perished in the flames at Paris, March 18, 1314, declaring their innocence to the last. See *Templars*.

MOLAR TEETH. See *Teeth*.

MOLASSES, or MELASSES; the liquid or uncrystallizable part of the juice of the sugar-cane, which separates from the granulated part or sugar. (See *Sugar*.) The name is also applied to the similar portion of any other vegetable juice from which sugar is obtained.

MOLDAU; a river of Bohemia, which rises in the Bohmerwald (Bohemian forest), flows north through Bohemia, by Budweis and Prague, and empties itself into the Elbe opposite to Melnik, and thus furnishes Bohemia a communication with the North sea. A project was formed for uniting the Moldau, by means of a canal, with the Danube; but, on account of the difficulty of cutting through the mountains, a railroad has been considered a more practicable undertaking. See *Austria*.

MOLDAVIA (in German, *Moldau*; Turkish, *Bogdan*); a province of the Ottoman empire, with the title of *principality*, extending from lat. 45° 12′ to 48° 5′ N., and from lon. 25° 10′ to 28° 20′ E., bounded on the east by the Russian province of Bessarabia, from which it is separated by the Pruth, on the south by Bulgaria and Walachia, and on the west by Transylvania; superficial extent, 17,000 square miles; population differently stated at from 360,000 to 500,000. Previously to the treaty of 1812, it extended eastward to the Dniester, with a superficial area of about 34,000 square miles, and a population of 800,000. The western part of the country is mountainous, branches of the Carpathian chain projecting towards the interior; the southern is low and marshy. The winters are severe; the heat is great in summer, but the nights are cool. The soil is fertile, but war and an oppressive government have prevented it from being well cultivated. Corn, fruits, wine, honey, wax, and tobacco of an inferior quality, are among the principal productions; the gold, silver, and iron mines are not worked; mineral salt and saltpetre are produced in large quantities. The greater part of the country is devoted to pasturage, and immense numbers of horses, black cattle, sheep, and swine are raised by the inhabitants. The horses are strong, active, and gentle, and 10,000 have been exported annually to Austria and Prussia. The cattle are of an excellent quality, and have been sent generally to Poland and Russia. The inhabitants are strongly attached to the Greek church. The Moldavians are supposed to be descendants of the ancient Dacians, whose country they occupy, of Roman colonists, and of the Sclavonians, who conquered Moldavia. The following cut represents the costume of a male and female. Their language is a corrupt Latin, mixed with Sclavonic. They call themselves *Rumuni*, or *Rumniasti*, probably a corruption of *Romani*. They are described as ignorant, indolent, treacherous, and vindictive; although not slaves, they have always been the subjects of the severest oppression. The different professions and trades are almost entirely in the hands of Armenians, Jews, Italians, and Russians. The capital of the province is Jassy (q. v.), which is also an archiepiscopal see; Okna and Galacz are the other principal towns; the Pruth and the Sereth, both emptying into the Danube, are the chief rivers. Moldavia has generally shared the fate of Walachia, with which, under the Romans, it formed the province of Dacia Transalpina (beyond the Carpathian). Bogden, a Walachian chief, established himself in the country in the twelfth century, and from him it was called *Bogdiana*, but afterwards received the name of *Moldavia*, from the river Moldava, a branch of the Sereth. Although the Walachians and Moldavians were of the same origin, and spoke the same language, they were often at war with each other, and formed two independent states. (See *Walachia*.) In the fourteenth century, Moldavia became tributary to the kings of Hungary, and in the beginning of the sixteenth century, became a dependant of Turkey. The inhabitants were permitted to retain their laws and privileges, and the free exercise of their religion, and to appoint their waywode, or hospodar. In the beginning of the eighteenth century, the Porte assumed the right of appointing the hospodar, and from that time the dignity was sold to the rich Greeks of Constantinople, who practised every means of extortion upon the inhabitants. In 1812, the region lying to the east of the Pruth was ceded to Russia. In 1821, the hospodar Michael Suzzo, a Greek, received the Greek insurgents with open arms, and raised the standard of revolt. Turkish armies were poured into the unhappy province, which became a scene of the most barbarous atrocities. (See *Greece, Revolution of*, and *Ypsilanti*). It was not evacuated until 1826, after the most pressing demands of Russia. It was then stipulated that the hospodars should be chosen by the Boyards, from their own number, for a term of seven years, subject to the confirmation of the Porte. In 1828, the Russians occupied Moldavia without resistance. By the peace of Adrianople, 1829, it is provided that the hospodar shall be named for life; that the province shall pay a tribute of 165,000 piastres to Turkey, and be subject to no requisitions; that no Turk shall reside in the country, which remains in the hands of Russia till indemnification for the expenses of the war shall be made by the Porte. See *Russia*, and *Ottoman Empire*.

MOLE (*talpa*). The mole is from five to six inches in length: its head is large, without any external ears, and its eyes so very minute, and concealed by its fur, that it is a vulgar opinion, that it is deficient in these important organs. Its fore legs are very short, and extremely strong and broad, turned outwards, by which conformation it is enabled to burrow with great ease. The snout is slender, strong, and tendinous, and it has no external appearance of a neck. The females bring forth four or five young, about the month of April, for the preservation of which, the parents construct a habitation, with great diligence and care. They first raise the earth by forming an arch, leaving partitions or pillars at certain distances; beat and press the earth, interweave it with the roots of plants, and, at last, render it so hard and solid, that the rain cannot penetrate. They then raise a small hillock under the principal arch, on which they construct the nest for their young. This internal hillock is pierced with sloping holes, which serve as passages for the parent animals to go out. These paths are firm, and extend about twelve or fifteen paces, issuing from the nest like rays from a centre.—Moles live in pairs, and are chiefly found in places where the soil is loose and soft, and affords the greatest quantity of worms and insects. They exhibit great dexterity in skinning the worms, which they always do before they eat them, stripping the skin from end to end, and squeezing out all the contents of the body. The skin of the mole is extremely tough; its fur is close set, and as soft as the finest velvet: it is usually black, but has sometimes been found spotted with white, and, more rarely, altogether of that colour. Though common in almost all parts of Europe, it is said to be entirely unknown in Ireland. Linnæus says that it passes the winter in a state of torpidity: in this, however, he is contradicted by Buffon, who states, that it sleeps so little in winter, that it burrows in the same manner as in summer. The destruction caused by these little animals is sometimes very great; and such are their numbers, that Buffon caught 1300 of them in three weeks. In Holland, we are also told that they were so numerous, in 1742, as to destroy the hopes of the agriculturists. Even in ancient times, it appears that they were considered as pests, and a temple was erected, in Æolia, to Apollo Smintheus, or the destroyer of moles. From an account given by Mr Bruce, in the Transactions of the Linnæan Society of London, it appears that the mole is able to swim great distances. Doctor Darwin has given a very interesting paper on these animals in his *Phytologia*, and of the best methods of capturing them, to which we refer those of our readers who wish for fuller information.

The mole of America is wholly different from the mole of Europe, and has been termed the *shrew-mole*, under which word a description of it will be found in this Encyclopedia.

MOLE CRICKET (*gryllus gryllo-talpa*, L.). The legs and fore feet of these insects are very large and strong, and placed, like those of the mole, so as to be useful in burrowing. They commonly live under ground, through which they can burrow with great rapidity. The female forms a nest of clay, about as large as a hen's egg, and deposits in it nearly a hundred and fifty eggs, about the size of a grain of rice. These the mother defends with extreme vigilance; and some of her contrivances for the preservation of her offspring are very curious. Wherever a nest is situated, fortifications, avenues, and intrenchments surround it: there are also numerous winding passages which lead to it, and the whole is environed by a ditch, which presents an impassable barrier to most insects. They are very destructive in gardens, by dividing or injuring the roots of plants; but it appears that this is done less for nourishment than in making their burrows, as their principal food consists of insects and worms. The male has a chirp, or note of a low, jarring sound, which may be heard in the evening and night. At the approach of winter, the mole crickets remove their nests to so great a depth in the earth as to avoid any injury from the frost. When the mild season returns, they raise it in proportion to the advance of the warm weather, and at last elevate it so near the surface as to permit the sun and air to act on it. Their favourite residence is in hot-beds, where they occasion havock. In France, they are known under the name *courtilières*. (See White's *Natural History of Selborne;* and a paper by M. Feburier, *Nouv. Cours d'Agricult.*) No method has yet been discovered of preventing the depredations of these pernicious vermin. But as most of this kind of insects are averse to the smell of hog's dung, the use of this article would probably expel them from infested places.

MOLE; a mound or massive work formed of large stones laid in the sea, extended either in a right line or an arch of a circle, before a port, which it serves to defend from the violent impulse of the waves, thus protecting ships in a harbour. The word is sometimes used for the harbour itself. The Romans used it for a kind of mausoleum, built like a round tower on a square base, insulated, encompassed with columns, and covered with a dome.

MOLE, MATTHEW, president of the parliament of Paris, and an eminent statesman, was born in 1584. His father, also president of parliament, had distinguished himself by his prudence and courage in that station, during the troubles of the league; and the son gained not less honour during the disturbances of the Fronde. His integrity and fearlessness often resisted the arbitrary measures of the despotic Richelieu; and under the no less ambitious, but less vigorous Mazarin, he acquired the esteem of all parties. In 1614, Molé was named *procureur-général*, and, in 1641, first president of the parliament, through the influence of Richelieu, whom he had opposed in the process against the marshal de Marillac. The disturbances of the Fronde soon after commenced. In this contest of factions, Molé defended with equal prudence and sagacity, the interests of justice and freedom, as well as those of the court, and, when Paris became the theatre of tumults, conducted with so much firmness and dignity, that his bitterest enemies could not withhold from him their approbation; and even Condé and cardinal de Retz were forced to esteem him, although his unshaken rectitude, and devotion to the welfare of the nation and the safety of the throne, frequently frustrated their designs. At one time, indeed, wearied with the intrigues of the interested and ambitious, and unprotected by the feeble and wavering court, he voluntarily resigned the seals, and rejected the offer of a cardinal's hat for himself, and of the place of secretary of state for his son, by which Anne of Austria wished to idemnify him for the loss of his office. But he was soon obliged to resume the difficult station, and was more than once threatened with personal violence by the furious partisans of the Fronde, whom he overawed by his inflexible dignity. These unhappy disputes between the parliament, the court, and the leaders of the Fronde, did not cease until after Louis XIV. had assumed the reins of government: under his brilliant and artful despotism, the freedom of the parliament and of the nation perished together. Molé died in 1656. In the Memoirs of De Retz, and the other records of the time of the regency of Anne of Austria and Mazarin, Molé's influence in the troubled state is everywhere perceptible, and all voices agree that a better man could not have been at the head of affairs in that stormy period.

MOLECULE, in chemistry, is used to signify the constituent particles of bodies. Chemists have divided them into integrant molecules and constituent molecules. The former are such as have the same properties as the mass, and are therefore compound or simple, as the mass is one or the other. Thus a mass of pure metal consists of integrant molecules, each of which has the metallic properties of the mass. A mass of alloy, in the same manner, is composed of integrant molecules, each of which is compounded of the different substances forming the alloy. If we decompose a compound integrant molecule, we obtain the constituent molecules of which it consists. An integrant molecule of water is composed of constituent molecules of oxygen and hydrogen.

MOLES ADRIANI; the mausoleum of Adrian, in Rome, consisting of a square basement, of 170 feet in length, on which rises a round tower, 115 feet in diameter. In the wars with the Goths, it was used as a fortress, and the popes converted it into a castle, which received the name of *St Angelo*, from the statue of the archangel Michael on its summit.

MOLIERE, JEAN BAPTISTE POCQUELIN DE, the celebrated French comic writer, was born at Paris, Jan. 15, 1622. His father was *valet de chambre* and upholsterer to the king. In his fourteenth year he enjoyed the instructions of the Jesuits, and made great progress. Gassendi, Chapelle, Bernier, were his teachers. When his father had become debilitated, he had to discharge his office about the person of Louis XIII. In 1641, he accompanied the king to Narbonne. The French theatre had at that time begun to flourish, through the talents of the great Corneille, and the young Pocquelin, who had imbibed a strong passion for the stage, now formed a company of young persons of similar tastes, and exchanged his family name for that of *Molière*, either from regard to his parents, as his profession was then deemed disreputable, or in imitation of other actors, and resigned the office of his father. His company soon became distinguished. During the troubles of the Fronde, he is lost to our view; but after the restoration of order, we find him at the head of a strolling troop, which acted the *Etourdi*, at Lyons, in 1662. This is the first comedy written in verse by Molière. The truth of the dialogue, the inexhaustible skill of a valet, who is continually employed in rectifying the blunders of his master, the interest of the situations arising therefrom, have kept this piece on the theatre, notwithstanding the want of connexion between the parts, the coldness of the personages, and the incorrectness of the style. Molière gained equal applause as a poet and a dramatist, and drew all the spectators from another company at Lyons. Till that time, all the French pieces had been full of improbable intrigues. The art of representing character and manners on the comic stage was reserved for Molière. This art, the germ of which is seen in the *Etourdi*, united with variety of incident, kept the attention of the spectators awake, and concealed the faults of the piece. The *Etourdi* was acted with equal applause in Bezières. Here the prince of Conti, who had known Molière at school, had just assembled the estates of Languedoc. He received the poet as a friend, and intrusted him with the charge of amusing the town and the assembly. *Le Dépit Amoureux*, and *Les Précieuses Ridicules* were brought forward on the theatre of Bezières, and were admired. In the *Dépit Amoureux*, the incidents are better arranged than in the *Etourdi*. In the actions of the personages, a genuine comic vein is exhibited, and their language displays much spirit and humour; but the plot is too complicated, and the *denouement* not sufficiently probable. The plot in the *Précieuses Ridicules* is more simple. A delicate satire on the prevailing affectation of the character of *bel esprit* and of a romantic style, on the pedantry of learned females, and affectation in language, thoughts, and dress, is the object of this comedy. It produced a general reform when it was brought forward in Paris. The spectators laughed, recognised themselves, and clapped. Louis XIV. was so well pleased with the performances of Molière's company, that he made it his own company, and gave its director a pension of 1000 francs. The *Cocu Imaginaire* appeared in 1660. This piece also contains a fund of sportive humour, and keeps the spectators continually amused. Censure was not silent on its appearance, but was not listened to. *Don Garcie de Navarre*, in imitation of the Spanish, was criticised with more justice. It is a cold attempt at a more elevated style. The *Ecole des Maris*, the idea of which is drawn from the Brothers of Terence, contains a simple and entertaining plot, and a natural *denouement*. The theatre still resounded with the applause with which this piece was received, when, *Les Fâcheux*, projected, executed, and committed to memory by the actors, within a fortnight, was performed at Vaux, at the residence of Fouquet, intendant of finances, in the presence of the king and court. This comedy is almost destitute of plot, but the intention was to interest the spectators by the multiplicity of characters, the truth of the portraits, and by the elegance of the language. It is said that the king, on going away from the first performance, happening to see the count Soyecourt, a tiresome narrator of his exploits in the chase, said to Molière, "There is an original that you have not copied." In twenty-four hours, the scene of the hunter was inserted; and, as Molière was not acquainted with the terms of the chase, he requested Soyecourt himself to explain them to him. The *Ecole des Femmes* (1662) met with critics, who, overlooking the art which prevails in the management of the inferior personages, and in the natural and quick transition from one surprise to another, animadverted upon some negligences of style. Molière answered them by his spirited *Critique de l'Ecole des Femmes*. The *Impromptu de Versailles* was a reprisal, occasioned by an attack of Boursault, who had written a piece against him, entitled *Le Portrait du Peintre*. The court was very much pleased, in 1664, with *La Princesse d'Elide*, a comic ballet, prepared for an entertainment given by the king. Paris, which saw this ballet without the splendour which had embellished it at Versailles, received it less favourably. Another ballet, *Le Mariage forcé*, is drawn from Rabelais. *Don Juan, ou le Festin de Pierre*, excited much reprehension by the impiety of some of the expressions placed in the mouth of the profligate hero. Molière retrenched the objectionable parts in the second representation. *L'Amour Médecin* is one of the over-hasty works, which are not to be strictly criticised. It was written, studied, and represented within five days. In this piece, Molière, for the first time, attacks the physicians, which, it is said, he was induced to do by the fact that an ignorant and avaricious practitioner cheated him by overcharges. His great piece, *Le Misanthrope*, was but moderately well received at first, but, in the sequel, was justly considered as one of the finest productions of modern comedy. It must, nevertheless, be allowed that it has been more admired in the closet than it has pleased on the stage—the reason, Voltaire believes to be, because the plot is delicate and ingenious, rather than lively and interesting; because the dialogue, with all its beauty, does not always seem necessary, and therefore retards the action; and because the *denouement*, though skilfully introduced, leaves the spectator unexcited. He adds that the Misanthrope is a more delicate and a finer satire than those of Horace and Boileau, and at least equally well written, but that there are more interesting comedies, and that the *Tartuffe*, for example, unites the same beauties of style with a much more lively interest. In 1665, appeared the *Médecin malgré Lui*, a farce full of humour. *Le Sicilien, ou l'Amour Peintre*, is a short piece which pleases by its grace and gallantry. But his reputation was carried to its highest summit when the *Tartuffe* appeared. Weak minds and pretended saints cried out against the author; but the piece was played and applauded, after it had been kept back for years by the clamour. In this, hypocrisy is fully unveiled; the characters are equally various and true; the dialogue is elegant and natural; the *denouement* alone is unsatisfactory. An impious and obscene farce, entitled *Scaramouche*, having been represented at court, the king said to the great Condé, as he was leaving the theatre in his company, "I should like to know why the people, who are so much scandalized at Molière, say nothing about *Scaramouche*." "The reason is," replied the prince, "that *Scaramouche* ridicules only God and religion, about which these people care nothing, while Molière's piece ridicules themselves." In 1668, Molière published his *Amphytrion*, a free imitation of Plautus. With the exception of a tedious scene between Jupiter and Alcmene nothing can be more humorous. *L'Avare* (the Miser), an imitation of the *Euclio* of Plautus, is, in the leading character, a little overdone; but the multitude is only to be struck by strong traits. Rousseau censured this piece, because the paternal authority is undervalued in it. *George Dandin, ou le Mari confondu; Monsieur de Pourceaugnac; Les Fourberies de Scapin*, are rather amusing than instructive. *Le Bourgeois Gentilhomme*, though mixed with some buffooneries, is highly comic, and full of power. Molière bestowed more care on his *Femmes Savantes*, a witty satire on affected taste and pedantic learning, which at that time prevailed in the *Hôtel de Rambouillet*. The incidents are not all well connected; but the subject, dry as it may be in itself, is exhibited in a truly comic form. The development is admirable, and has been a hundred times imitated. The same is true of the *Malade imaginaire*, in which the quackery and pedantry of the physicians of the times are fully delineated. With this piece the author concluded his career. He was indisposed when it was performed. His wife and Baron urged him not to play: "What," he replied, "will all the poor workmen do? I could not forgive myself for neglecting, a single day, to give them bread."

The exertion with which he played produced convulsions, which were followed by a hemorrhage. He died after the lapse of a few hours, Feb. 17, 1673. The academy did honour to itself and Molière, in 1778, by erecting a bust of him, with the verse of Saurin:

> Rien ne manque à sa gloire; il manquait à la nôtre.

The archbishop of Paris at first refused him burial; but the king himself insisted on it, and he was interred in St Joseph.

Molière is the true father of the French comedy. His works may be considered as a history of the manners, fashions, and tastes of his times, and as the most faithful picture of human life. Born with an observing mind, skilful in catching the outward marks of the passions and emotions, he took men as they were, and, like a skilful painter, exhibited the most secret recesses of their hearts, and the tone, the action, and the language of their various feelings. "His comedies," says Laharpe, "properly read, may supply experience, because he has depicted not mere passing follies, but human nature, which does not change. Of all who have ever written, Molière is the one who has best observed men without seeming to do so. His knowledge of human character seems to have come by intuition. His pieces are as pleasing when read as when performed. Molière is a writer for those of ripened age and the gray-haired. Their experience corresponds to his observations and their memory to his genius." In his domestic relations, Molière was not fully happy: he who made merry on the stage with the weaknesses of other men, could not guard against his own weakness. A violent passion induced him to marry the daughter of the actress Bejart, and he thereby incurred the ridicule which he had so often cast on husbands of a disproportioned age. He was more happy in the intercourse of his friends; and the marshal Vivonne, the great Condé, and even Louis XIV., admitted him to a footing of intimacy. As an actor, Molière was not to be surpassed in high comic parts, such as Arnolphe, Orgon, Harpagon, &c. In 1773, Bret published an edition of his works at Paris (in 6 vols.), with interesting commentaries. See Pachereau's *Hist. de la Vie et des Ouvrages de Molière* (Paris, 1825.)

MOLINA, JUAN IGNACIO, a Jesuit, was born in Chilé, and, after a long residence in that country, was obliged to leave the Spanish territories, on account of the dissolution and expulsion of his order. Molina retired to Italy, and published, in Italian, his valuable Civil and Natural History of Chilé (Bologna, 1782 and 1787, 2 vols.); which has been translated into Spanish, French, German, and English (Middletown, Connecticut, 1808).

MOLINA, MOLINISTS. See *Jansenius*, and *Grace*.

MOLINOS, MICHAEL. See *Quietism*.

MOLLA; a spiritual and judicial officer among the Turks, who has civil and criminal jurisdiction over towns or whole districts, and is therefore a superior judge, under whom are the *cadis*, or inferior judges. Over the *mollas* are the *cadileskers*, or supreme judges of the empire, who sit in the divan.

MOLLE (*soft*, or *sweet*); a relative term, used by the French, signifying a *flat sound*, that is, a sound which is half a tone lower than the sound with which it is compared,—as B flat, or B *molle*, is a semitone beneath B natural, or B *durum*. This term, as its sense intimates, is applied to the flat sounds on account of their supposed softness or sweetness, in comparison with the effect of the natural and sharp tones.

MOLLUSCA. We have already given a pretty full account of the rise and progress of the study of molluscous animals, under the article *Conchology*, which we treated as a distinct branch of Natural History.

Molluscous animals are comprehended in the second great division of the animal kingdom—animals without a backbone. They are destitute of an articulated skeleton or vertebral column. The nervous system is not developed in the form of a spinal cord, but simply into a certain number of medullary masses situated in different points of the body, the principal of which is called the brain, and is placed transversely on the œsophagus, and envelopes it with a nervous collar. The organs of sensation and motion have not the same uniformity in point of number and position as in the vertebrate animals, and a greater aberration is observable in the position of the heart and organs of respiration, as well as in the structure of the latter. Some species are formed for breathing elastic air, and others fresh or salt water. Their organs of locomotion, and others, which are external, are generally symmetrically arranged on the two sides of an axis.

The mollusca have a double circulation, their pulmonary system invariably describing a distinct circle. The function of breathing is always assisted by, at least, one ventricle, situated between the pulmonary veins and the arteries of the body, and not, as in fishes, between the veins of the body and pulmonary arteries. It is then an aortic ventricle. It is only the cephalopoda* that are provided with a pulmonary ventricle, which is subdivided. The aortic ventricle is likewise divided in some genera, as in the arca † and lingula.‡ In some other bivalves, the auricle only is divided. When more than one ventricle exists, they do not consist of a single mass, as in warm-blooded animals, but are remote from each other.

The blood in molluscous animals is white, or bluish-white, and seems to contain a smaller proportion of fibrin than that of vertebrate animals. Cuvier supposes that the veins perform the functions of absorbent vessels.

The muscles in this class are attached to their skin by various points, forming, in those places, tissues which possess more or less density. Their motions consist of different contractions, varying in their direction, producing inflections and prolongations, together with relaxations of their several parts, by means of which they creep, swim, and seize upon such objects as the formation of these parts are adapted to. They are, however, incapable of rapid progress, their limbs not being supported by articulated and solid levers.

Most of the mollusca are possessed of great irritability, frequently continuing after they are cut asunder. Their skin is naked, extremely sensible, and usually covered with a mucous substance, which is secreted from its pores. No organ of smell has yet been detected in them, although they appear to possess that sense. Cuvier thinks it probable that the whole skin may be susceptible of distinguishing odours. All the *cephala*, *brachiopoda*, *cirripeda*, and part of the *gasteropoda* and pteropoda are destitute of eyes, while the *cephalopoda* enjoy them in as complicated a degree as the warm-blooded animals. The eyes are situated sometimes at the base, sometimes at the middle, and frequently at the extremity of the tentacula. The eye of the *Helix Pomatia* is represented pl. 60, f. 92, *e;* it is situated at a little to the one side of the rounded extremity, or papilla, *p*, of the tentaculum, and is attached to an oval bulb of a black colour. It receives only a slender branch, *o*, from a large nerve, *n n*, which is distributed to the papilla of the tentaculum, and appears to be appropriated exclusively to the sense of touch. The bulb, with the eye attached to it, is represented, in this figure, as half retracted within the tubular sheath of the tentaculum, *ss*. The cephalopoda are the only ones in which have been discovered the organ of hearing, and where the brain is enveloped in a kind of case of a cartilaginous consistence.

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* See article Conchology, Class I., Order II., p. 376.

† Ib. Class II., Order II., p. 379.

‡ Ib. Order I., p. 378.

Almost all molluscous animals have a peculiar development of the skin, which covers their body, like a *mantle*, and has received that appellation. This process, however, is sometimes narrowed into a simple disk, or is tubiform, or hollowed into a sac, and in some cases it is divided and extended in the shape of fins. There are two distinct kinds of molluscous animals, namely, cephalous, or such as are provided with a head, and acephalous, or destitute of a head. These are again distinguished by such as are *naked* mollusca and *testaceous* mollusca, or with a shelly envelop. The naked mollusca have a membranous or fleshy mantle; which, however, has frequently one or more hard laminæ in its texture. These are increased in dimensions and thickness, by a deposit of earthy and animal matter combined; the new layers overlapping the old ones. When this substance remains concealed within the tissue of the mantle, the animals are called naked mollusca. The common field snail, (*Limax agrestis*, pl. 60, f. 5.) and the black snail, (*L. ater*, pl. 32, f. 25.) are examples of animals of this kind. More frequently however, this shelly matter becomes so greatly developed that the animal, in a state of repose, can contract itself within it; it is then termed a *shell*, or a *testaceous* animal, which is exemplified by the common garden snail shell. (*Helix aspersa,* pl. 60, f. 15.) The epidermis which covers these animals is very thin and sometimes desiccated, or of a woolly texture.

The variety of form, surface, colour, brilliancy, and substance is almost infinite. They are nearly all calcarious, although some are simply of a horny consistence; but in both cases they consist of matter deposited in layers, or exuded from the skin under the epidermis, in the same manner as the hardened mucous covering, nails, hairs, horns, scales, and even teeth. The shelly tissue differs according as its transudation is deposited either in parallel laminæ, or in close set vertical filaments.

Every mode of mastication and deglutition is illustrated in the mollusca; for we find their stomachs simple, complicated, and frequently provided with a peculiar armature; the alimentary canal is variously prolonged. Most species have salivary glands, and always a liver, but neither pancreas nor mesentery. Several have peculiar secretions.

Several of the mollusca are bisexual. Some produce their young alive, while others are oviparous. The eggs in some are covered by a shelly envelop, and others only by a simple viscosity.

The turbinated mollusca appear to be animals in a slight state of development; they possess but little industry, and are only preserved by their great fecundity, and extreme tenacity of life. They are all oviparous; their reproduction consequently depending on sexual impregnation.

Some genera of mollusca inhabit the sea and fresh waters, while others are entirely terrestrial: and a few species are amphibious, as may be exemplified in the *succinea, amphibia*, plate 17, f. 75.

They feed on all substances, both animal and vegetable; some will eat these even in a putrid state, while others will only consume them fresh.

The uses of this numerous class are extremely varied. Many of them are taken as food by man, and others supply nutritious prey for birds and fishes. Their shelly coverings are converted into many useful articles of commerce; and from the veins of certain species of shells called *purpura* is extracted the beautiful dye of the ancients, called Tyrian purple. The *P. lapillus* which is common on the British shores, adhering to stones, yields this dye; it is represented in pl. 60, f. 79. For a description and figures of the different parts of testaceous mollusca, see Conchology, Vol. II. p. 74, and pl. 19.

CLASS I.

CEPHALOUS MOLLUSCA,

OR SOFT ANIMALS WITH A HEAD.

Lamarck divides the turbinated testaceous mollusca into five orders, depending upon the complication of their internal organization. These are first:—

ORDER I.—HETEROPODA.

Destitute of arms arranged around the head; unprovided with a foot under the belly or throat for locomotion, but furnished with one or more irregularly set fins. See Conchology, Vol. II. p. 376.

The animals of this order are distinguished from all the other Mollusca by the form of their foot, which, in place of a horizontal disk, is compressed into a circular lamina, and is used as a fin, and on the edge of which, in several species, is a dilatation forming a hollow cone, representing the disk of the other orders. Their branchiæ are situated on the posterior part of the back, and composed of plumiform lobes, directed forward; immediately behind these are the heart, a small liver, with part of the viscera and internal organs of generation. Their bodies are of a gelatinous, transparent substance, lined with a muscular layer, elongated, and terminated by a compressed tail, in most species. There is a muscular mass belonging to the mouth, and the tongue is provided with little hooks; the œsophagus is very long; the stomach thin; on the right side of the visceral mass are two prominent tubes affording a passage for the fæces, ova, &c. They generally swim on their back, with the foot upwards. They possess the property of distending their body by filling it with water, in a way which is not yet properly understood.

Carnaria Cymbium, pl. 17. f. 1. Body elongated, gelatinous, pellucid, with a tail at its posterior termination, and provided with one or more unequal fins; heart and branchiæ united into one mass, which projects from the abdomen and is situated near the tail, and inclosed in a shell; head distinct, with two tentacula; two eyes, and a contractile elongated mouth.

ORDER II.—CEPHALOPODA.

Lower part of the body enveloped in a bag-shaped mantle, with the head issuing from the sac, and having inarticulated arms, to which are attached cups, surrounding the mouth of the animal, which is furnished with two horny mandibles.

The mantle unites under the body; in several species the sides are extended into fleshy fins; head projecting from the sac, is provided with two large eyes, and crowned with longer or shorter fleshy arms or feet, capable of motion in all directions, their surface provided with cup-shaped suckers, by means of which they can adhere firmly to other bodies; these feet are used for prehension, natation, and walking. They swim with the head behind, and crawl in all directions, with the head under the body. At the opening of the sac in front of the neck is placed a fleshy funnel as a passage to the excretions. See Conchology, Vol. II. p. 376.

Division I.—Cephalopoda Sepiaria.

Loligo vulgaris. Medium cuttle-fish, pl. 32. f. 6. With a fleshy depressed body contained in a bag, which in most species is obtuse behind and margined on both sides through their whole length by a narrow fin; within the body, and near the back is included a free, calcarious, spongy, and opaque bone; mouth terminal, surrounded with ten arms provided with cups, of which two are longer than the rest, and placed on peduncles.

Division II.—Cephalopoda Monothalama.

Shell unilocular, entirely external, and enveloping the animal.

Argonauta Argo. Paper Nautilus, pl. 17. f. 2. and pl. 60. f. 1. The arms have two rows of cups, the pair of feet nearest the back are dilated at the extremity into a broad membrane. The body of the animal does not penetrate to the bottom of the volutions of the shell, and there is no visible muscular attachment, so that it appears not to be a permanent resident. The two membranous arms are frequently elevated by the animal, by way of sails, and with three other tentacula thrown over each side of the shell, and acting as oars, the animal frequently sails on the surface of the water, like a little vessel.

Division III.—Cephalopoda Polythalama.

Family I.—Ammonacea.

Septa sinuous, lobed and cut at the margin, meeting together upon the inner wall of the shell, and articulated by jagged sutures.

Shell multilocular, partly or entirely internal, and inserted in the posterior part of the body.

All the species of this division are fossil, for the generic characters see Organic Remains.

Family II.—Nautilacea.

Shell disciform, with a central spine, and short cells, which do not extend from the centre of the circumference.

Nautilus Pompilius. Pl. 17. f. 3, and pl. 60. f. 63. The animal, according to Rumphius, is partly contained within the last cell, has the sac, eyes, parrot-beak, and funnel of the other Cephalopoda; but the mouth, in place of having their large feet and arms, is surrounded by several circles of numerous small tentacula, which are destitute of cups; a ligament arising from the back traverses the whole siphon and fastens it there. The other genera are fossil. See Organic Remains.

Family III.—Radiolacea.

All the genera are fossil. See Organic Remains.

Family IV.—Spheaulacea.

Fossil, except one species found near Corsica, which is so minute that the animal has not been ascertained. See Organic Remains, plate 66.

Family V.—Cristacea.

All the species are fossil. See Organic Remains, pl. 66.

Family VI.—Lituolacea.

Shell partially spiral; the last volution continued in a straight line.

Spirula Peronii. Pl. 17. f. 4. Animal a cephalopode, pl. 60. f. 2. The body or that part which inhabits the shell, *a*.

Family VII.—Orthocerata.

Animals of the genera unknown. See Conchology, Vol. II. p. 376.

ORDER III.—TRACHELIPODA.

Body usually spirally convoluted, and separated from the foot, which is free, flat, and attached to the neck at its base for the purpose of locomotion; the body always enveloped by a spiral shell.

SECTION I.—ZOOPHAGOUS TRACHELIPODA.

Family I.—Involuta.

Shell destitute of a canal, but with the base of its aperture notched or effuse, and its volutions broad, compressed, and rolled up in such a manner, that the last nearly covers all the others.

Conus generalis. Pl. 60. f. 3. The thinness of the animal is proportioned to the narrowness of the aperture through which it passes; its tentacula and proboscis are highly protractile; the eyes are situated on the outer side of the former, and near the point; the operculum placed obliquely on the hind part of the foot, is too narrow and short to close the whole of the aperture. It has a narrow mantle and tube situated above the head, by which the water gains admittance to the respiratory organ.

Cypræa Europea. Pl. 60. f. 8. The proboscis is deep vermilion coloured; the tentacula yellowish red, spotted with yellow; the upper part of the foot streaked longitudinally with yellow and brown; and the mantle greenish brown, edged with brownish red.

Buccinum undatum. Pl. 60. f. 19, 20. The extracted animal; *a a*, the foot; *b*, the head; c, a kind of platform raised above the thoracic cavity, on which the point of the boring trunk rests. This organ is represented at f. 31, 32, and 33, *d, d;* f. 34 is a magnified view of the stomach and alimentary tubes; *d*, the cavity of the thorax; *e*, the mantle; *f*, the rectum; *g*, the stomach; *h*, the heart, thrown below, and to the right side of its natural situation, to allow the opening of the tube to be seen; *i*, the respiratory trunk; *k*, the organs of the muscles of the boring trunk; *l*, the course of the tube by which the foot is supplied with water; *m*, its termination.

Family II.—Columellaria.

No canal at the base of the aperture, but a subdorsal notch more or less apparent, and fold upon the columella.

Voluta Scapha. Pl. 17. f. 14. The animal has a large thick and fleshy foot, and the head is provided with a vail from the sides of which issue the tentacula; the proboscis is rather long, and there is an appendage on each side of the base of the siphon. When the proboscis is extended, it can bend in all directions, by means of the retractor muscles, acting with opposing forces. This interesting mechanism is illustrated by fig. 32, pl. 60. the proboscis is represented retracted about a half; the external cylinder, *a*, is seen enveloping a portion of the inner one, *b*, the point of which c is the termination of the proboscis; the muscles which draw it within the body, *d d*, are in a state of contraction, and at *e* is represented the great annular muscle, which pushes forward the inner cylinder, and consequently lengthens the organ.

Family III.—Purpurifera.

Shell with a short canal ascending posteriorly, or with an oblique notch at the base of its aperture, directed backwards. They are all operculate.

Purpura lapillus. With two slender retractile tentacula, on which are placed the eyes. A vascular reservoir near the stomach yields a colour similar to the famous Tyrian purple.

Family IV.—Alata.

Shell with a greater or less canal at the base of the aperture, of which the right lip changes its form as the animal advances in age, and has a sinus at the lower part.

Strombus Succinctus. Pl. 17. f. 28.

Family V.—Canalifera.

Shell with a canal more or less long at the base of the aperture, and of which the right margin does not change its form as the animal advances in age.

Murex acanthopterus. Pl. 17. f. 32. The animals of each sub-genus are furnished with a proboscis; long approximate tentacula, on the external side of which are the eyes; and a horny operculum; they are destitute of the veil on the head; and the want of the siphon excepted, resemble the animals of the Buccina.

SECTION II.—PHYTIPHAGA.

Destitute of projecting siphon, and respiring generally by an orifice; furnished with jaws, and feeding on vegetables, shell with the aperture entire, and without any notch or canal. Many of the species live upon land, and respire air, while others inhabit fresh water, either stagnant or running. Many are marine. Some families are furnished with an operculum attached to the foot of the animal.

Family I.—Turbinacea.

Shell turreted or conoid, having an oblong or rounded aperture, not widened, and the margin disunited.

Turbo smaragdus. Pl. 17. f. 45. The animal has two long tentacula; and the eyes placed on peduncles at their external base; the sides of the foot are provided with membranous wings, sometimes simple, at others fringed, and occasionally furnished with one or two filaments.

Turbo littoreus. Pl. 60. f. 13. Animal striped with black; provided with two tentacula, which are setaceous, not quite round, with black annulations; eyes prominent, situate at the base of the tentacula.

Family II.—Scalarides.

Shell devoid of plicæ or folds on the columella; the margins of the aperture are united in circular forms.

Scalaria coronata. Pl. 17. f. 51. The tentacular organs of generation are long and slender, terminating in a setaceous filament; the eyes are situate at the base of these filaments.

Family III.—Plicacea.

Shell with the aperture not widened, and folds on the columella.

Tornatella flammid. Pl. 17. f. 54.

Family IV.—Macrostoma.

Shell auriform, with the aperture very wide, and the margins disunited; destitute of columella and operculum.

Haliotis tuberculata. Pl. 17. f. 55, and pl. 60. f. 12. The animal is one of the most highly ornamented of its order. A double membrane, cut into bands and provided with a double range of filaments, extends, at least in the more commonly known species, round the foot and on the mouth; outside its long tentacula are cylindrical pedicles which support the eyes. The mantle is deeply cleft on the right side, and the water which passes through the shell, penetrates this canal into the branchial cavity; along its edges three or four filaments are observable, which the animal has the power of protruding through these holes; the mouth is in the form of a short proboscis.

Sigaretus Haliotoideus. Pl. 60. f. 42. Shell concealed in the mantle; *m*, the membranous shield under which the shell is concealed; *n*, a sinus through which an arm is sometimes protruded; *o*, the tentacula, at the base of which the eyes are placed.

Family V.—Ianthenia.

Shell gibbous, conoidal, thin, transparent; aperture triangular, columella straight; surpassing the base of the right margin: destitute of an operculum.

Ianthena exigua. Pl. 17. f. 59. The animal is destitute of an operculum, but the under surface of its foot is provided with a vesicular organ resembling a foamy bubble, but which is, in fact, composed of a solid substance, which prevents it from crawling, but enables it to float on the surface of the water; the head is provided with a cylindrical proboscis, terminated by a vertically cleft mouth, and armed with little hooks, and is furnished with a bifurcated tentaculum on each side.

Family VI.—Neritacea.

Shells semiglobular or oval, destitute of a columella; and the left margin edged and transverse; provided with an operculum; inhabit fresh waters and the sea.

Natica monilifera. Pl. 60. f. 35. A front view, with tentacular head and mantle reflected; *c*, the head; f. 37, a view of the head from beneath; f. 38, one of the cartilaginous jaws.

Neritina fluviatilis. Pl. 60. f. 18. The foot in the animal is shorter than the shell; the head cylindrical and notched by a furrow, and provided with two long pointed tentacula, with the eyes sessile at their base.

Family VII.—Peristomida.

Shell conoid or sub-conoid with an operculum, and the margins of the aperture united. All the species are fluviatile, the animals respiring in water.

Paludina impura. Pl. 60. f. 11. The animal has two linear subulate tentacula, with eyes at their base; the mouth triangular; the foot sub-triangular; and the branchiæ composed of tufted filaments.

Valvata piscinalis. Pl. 60. f. 61.

Family VIII.—Melanides.

The margins of the aperture disunited; and the right one edged; animal provided with two tentacula.

Pirena Madagascarensis. Pl. 17. f. 67.

Family IX.—Lymnæcea.

With an oblong acutely tapering spire, generally smooth on the external surface, and having the outer margin of the aperture always acutely edged, and not reflected. Animal amphibious, generally destitute of an operculum; and the tentacula flattened.

Lymnæa stagnalis. Pl. 60. f. 4. The animal provided with two compressed, broad triangular tentacula, near the base of whose inner edge the eyes are situated. They feed on plants and seeds, and their stomach is a very muscular gizzard, preceded by a crop.

Family X.—Colimacea.

Shells acutely spiral, with no projecting parts on their exterior, except the markings of their periodical additions; the right margin of the aperture frequently reflected outwards; the tentacula are cylindrical, and usually four in number, but two in others: and destitute of operculum. They are terrestrial animals.

Cyclostoma elegans. Pl. 60. f. 10. The animal is provided with two cylindrical tentacula terminated by blunt tubercles, with eyes situated at their external base, placed on two obtuse tubercles; and provided with a horny operculum instead of branchiæ. The animal has merely a vascular network spread over the parietes of its pectoral cavity. See article Conchology, Vol. II. p. 376.

Succinea amphibia. Pl. 60. f. 58. With four tentacula, two short and two longer, at the tips of which are placed the eyes; each of the tentacula are furnished with a ring near the middle, below which they are thicker to the base.

Puna sexdentatus. Pl. 60. f. 57

Helix aspersa. Pl. 60, f. 15; f. 92 shows the apparatus connected with Helix Pomatia; f. 65, toothed cartilage of do.

ORDER IV.—GASTEROPODA.

Body never spiral, destitute of any shell, provided with a muscular foot attached its whole length under the belly, for the purpose of locomotion.

Some of the animals of this division are naked, and destitute of any calcarious covering; others are provided with a dorsal plate; and a third series have a shell which is more or less concealed in their mantle. The animals of this order are limited by Lamarck to those whose bodies are straight, and never spirally convoluted, and which are provided with a muscular disk or foot, united to the body nearly its whole length. F. 66, pl. 60, exhibits the nervous system of the *Aplysia; f. 67 Clio Borealis;* f. 67, do. in the act of swimming.

SECTION I.—PNEUMOBRANCHIÆ.

Branchiæ in the form of a vascular net on the wall of a particular cavity, opening by a hole, which the animal contracts and dilates at pleasure.

Family I.—Limacinæ.

Branchiæ in the form of a vascular net on the partition of a particular cavity, the aperture of which the animal can contract or dilate at pleasure. The body of the animals is elongated, and they crawl by means of a ventral disk bordered on the sides by a very narrow mantle.

Vitrina beryllina. Pl. 60. f. 7. The body of the animal is too large to be completely drawn within the shell; the mantle is provided with a double border, the upper one, which is divided into several lobes, extends considerably beyond the shell, and being reflected over it polishes it by friction.

Testacella Scutulum. Pl. 60. f. 6. Body oblong, with a shell at the posterior extremity; four tentacula; the eyes placed in the longest pair; anal opening at the posterior extremity.

Limax ater. Pl. 32, f. 25. Body black, rounded above and rugous towards the tail. *Limax agrestis.* Pl. 60, f. 5.

Onhidium Typha. Pl. 32, f. 7. Body oblong, and margined on both sides by the mantle; tentacula two, cylindrical and retractile: mouth without jaws, and with two annular appendages.

SECTION II.—HYDROBRANCHIÆ.

Family II.—Laphysiacea.

The branchiæ are situated in a particular cavity towards the posterior part of the back, and covered by an opercular scutellum; they are provided with tentacula. The animals of this family resemble large snails, but have a thicker body, and are broader towards the posterior part, and have a larger margin to their mantle; the head projects, and is provided with four tentacula, two of which are placed near the mouth, and the other two more behind. The branchial scutellum is corneous or cretaceous.

Dolabella callosa. Pl. 17. f. 88. Body oblong, narrowed before, widened posteriorly with the borders of the mantle folded over the back; provided with four semitubular tentacula set in pairs; branchial operculum inclosing a shell; anal opening situated near the branchiæ.

Laphysia depliens. Pl. 32. f. 8. pl. 60. f. 17. Body oblong convex, with a large mantle bordering it on each side, which covers the back while in a state of repose; head with a neck attached; and with four tentacula disposed in pairs; branchial operculum inclosing a shell; anal opening placed on the back, near the branchiæ.

Family III.—Bullacea.

Head very indistinct: the branchiæ are situate in a particular cavity, towards the posterior region of the back, and covered by a mantle; they are destitute of tentacula, and branchial operculum. Some species are unprovided with either exterior or interior shell; and in others the shell is completely concealed in the mantle; and there are several which have an external shell attached by a muscle.

Bulla hydatis. Pl. 60. f. 86. Body oblong ovate, slightly convex, divided into two transverse portions. with the mantle folded posteriorly; branchiæ covered; anal opening on the right side; body behind covered with a shell. This figure exhibits the back of the shell, with the lateral fin-like membranes protruded *a*. F. 87. The gizzard magnified. *a*, *a*, *a*, the tips of the plates covered by a thin membrane, and surrounding a muscular integument, thickened at the upper part *b*; the part attached to the mouth *c*, with the œsophagus communicating with the gizzard; *d*, the intestinal canal. F. 88. The gizzard laid open at its anterior end, showing the three corrugated corneous plates *e e e*, with their connecting ligaments *f*, magnified.

Bulla aperta. Pl. 60. f. 83. Lateral lobes of the foot thickened and reflected upwards; head indistinct; destitute of tentacula; branchiæ dorsal; shell concealed in the mantle, *a*. f. 84, the gizzard composed of three testaceous plates, showing the smaller plate *b*, with the connecting ligament *c*. f. 85, another view of the gizzard, showing the two larger plates *d d*, with their connecting ligaments; *e*, the gullet; *f*, the alimentary canal. F. 68, cutting teeth.

Family IV.—Calyptracea.

The branchiæ are situate in a cavity on the back near the neck, and projecting beyond or included in the cavity; shell always placed exteriorly.

Ancylus fluviatilis. Pl. 60. f. 9. Body covered by a shell; two compressed slightly truncated tentacula, with the eyes situated at their internal base; the foot short and elliptical, a little narrower than the body. They are small animals, and found on aquatic plants in slow running streams or lakes.

Family V.—Semiphyllidiacea.

The branchiæ are situated under the margin of the mantle, and disposed in a longitudinal series on the right side of the body; respiring in water.

Pleurobranchus plumula. Pl. 60. f. 14. Animal with an oval fleshy body, covered by a mantle; the foot is broad, and equally margined; the branchiæ are placed on the right side situate in a canal; mouth anterior and placed below in the form of a proboscis; two cylindrical tentacula, which are longitudinally cleft on the external side. Shell internal, thin and obliquely flattened, and lodged in the back.

Pl. 60. f. 22. Alimentary canal; *a* the first stomach; *c* the second stomach; *d* the third stomach; *e* the fourth stomach. The œsophagus dilates into a membranous crop *a;* at the lower part of which, *b*, the bile is poured in. It communicates by a narrow cardia with the second stomach *c*, which is a gizzard with thin but muscular parietes. The third stomach *d*, is membranous, and precisely resembles the plicated stomach of ruminants, in being disposed in large but delicate folds, by means of which the alimentary matter contained in it is moulded into long whitish cords. The fourth stomach *e*, is membranous, like the crop, but smaller. It is remarkable that the gizzard contains a narrow groove, running through its whole length, leading from the first to the fourth stomach, and probably subservient to a species of rumination.

F. 44. Another view of the animal; *g*, its protracted foramen; *h h*, the lower lamina, or border of the sustentaculum; *i*, the upper lamina, under the middle of which the shell is concealed; *k*, a plumose feeler; *l*, the tentacula, at the base of which the eyes are placed.

Family VI.—Phyllidiacea.

The branchiæ are situate under the margin of the mantle, and disposed in a longitudinal series around the body. The animals all respire in water.

Patella vulgata. Pl. 60. f. 21. The body is entirely covered by a shell; the head provided with two pointed tentacula, and the eyes situate at their exterior base; the branchiæ are disposed round the body, under the margin of the mantle; the anal opening and generative organ on the right anterior side; shell univalve, concave, conical, and simple, without a spire.

F. 23. The alimentary canal. *a*, the mouth; *b*, the buccal mass; c, the tongue; *d*, the stomach; *e e*, the intestine. F. 24 represents the tongue of the patella of its natural size; f. 25. is a portion magnified; f. 26, 27, and 28, are the cartilaginous jaws. This tongue is a narrow riband-shaped body, near three inches long, of almost equal breadth throughout, except at the apex, where it is soft and somewhat dilated; the surface roughened with three rows of teeth, the side rows alternating with the middle one, which is quadrifid, while the side teeth are divided only into two points. There are also placed along each side a double row of cylindrical tubes, whose apertures look towards the base. This curious spinigerous tongue is never protruded beyond the margin of the lips. It seems to be used for rasping down the food; and, in proportion as the anterior prickles are worn away in this operation, and absorbed, another portion of the tongue is brought forward to supply its place: but that there may be no deficiency in its length, we find the apex soft and vascular, where in fact a continual growth and additions are going on.

Chiton cinereus. Pl. 60. f. 78. The head anterior, sessile with the mouth below; destitute of tentacula or eyes; branchiæ disposed around the body, under the margin of the skin; anal opening at the posterior extremity. F. 93. The animal extracted. *a a*, the ventre; c c c, the intestinal canal; *e*, the anal opening; *d d d d*, the liver; *f*, the ovarium.

Family VII.—Tritoniacea.

The branchiæ are placed exteriorly, and situated above the mantle on the sides or on the back. The animals respire in water.

The animals of this family are distinguished from those of the other Gasteropoda, by the situation of their branchiæ, which are all exterior; in several genera these appear to be a degeneration of the mantle, or to be formed by portions of it having become branchial; the body is always destitute of a shelly covering, and neither have they one internally. All the animals inhabit the sea.

Doris argus. Pl. 32. f. 9. The body oblong, plain, convex, or subprismatic, bordered all around by a membrane extending to each side of the head; mouth placed anteriorly and below; four tentacula, two of which are situate in a hollow on the body, and the two others near the mouth; anal opening near the base of the back, surrounded by projecting, lacineated and fringed branchiæ; generative aperture on the right side. See Conchology, Vol. II. p. 378.

Tethys leporina. Pl. 60. f. 30. The alimentary canal. *a*, the proboscis; *b*, the œsophagus; c, the stomach; *d*, the intestine; *e*, the hepatic duct; *f*, the liver; *g*, the hepatic artery; *h h*, salivary glands—the parts are laid open.
F. 29. The horny jaws of a *Tritonia*.

ORDER V.—PTEROPODA.

Destitute of any shell, foot, or arms, either for locomotion or seizing their prey; but provided with two opposite and similar fins, fitted for swimming.

The animals of this order are provided with two opposite fins; they are mostly of a small size, and either destitute of appendages, or having very short ones, situate at the head; some species are provided with a thin cartilaginous or horny shell.

Hyalæa tridentata. Pl. 60. f. 36. Body enveloped in a shell, with two opposite retractile fins inserted at the sides of the mouth; head indistinct; mouth terminal at the junctions of the fin; destitute of eyes; branchiæ lateral.

CLASS II.

ACEPHALOUS MOLLUSCA,

OR SOFT ANIMALS DESTITUTE OF A HEAD.

The second great division of testaceous Mollusca, consists of animals which are destitute of any apparent head, and have been denominated by Lamarck, Conchifera. Their mouth is concealed in the bottom, or between the folds of their mantle, which is usually doubled and incloses the body, in the same manner as a book is clasped over by its cover; but it often happens, that, in consequence of the two lobes uniting before, it forms a tube; sometimes it is closed at one end, and then it represents a sac. The mantle is generally covered by a calcarious, testaceous bivalve shell united by a hinge or ligament, and in some instances the shell is multivalve; in two genera, however, it is only of a cartilaginous or membranaceous nature. The animal is always attached to this shelly covering by strong muscles, by means of which it can open or close the sides of its covering at pleasure. The brain is situated over the mouth, where one or two other ganglia are observable. The branchiæ or gills, generally consist of large lamellæ covered with vascular meshes, under or between which passes the water; and are more simple in those genera which are destitute of a shell. The leaflets of which the branchiæ are composed are generally crescent-shaped, placed on each side of the cloak, covering the abdomen of the animal upon the sides of which they are attached in pairs; they are formed of a tissue of small vessels arranged close together, like the pipes of an organ. From these branchiæ the blood proceeds to the heart, which is placed towards the back, is very small, but provided with venous and arterial vessels. The liver is extensive, and embraces the stomach and the greater proportion of the alimentary canal.

The mouth is always devoid of teeth, and is capable of only receiving the molecules, conducted to it by the water; at each side of the mouth are four thin triangular leaflets, which are the extremities of the lips. Some species are provided with two stomachs.

The whole animals of this division fecundate themselves, and in many of the species, the young ones are extremely numerous, and pass some time in the thickness of the branchiæ before quitting the parent. The whole acephala are aquatic animals.

The foot of the animal when it exists is a mere fleshy mass, the motions of which are effected by a mechanism analogous to that which acts on the tongue of the mammalia.

The Conchifera of Lamarck are separated into two orders as follows:—

ORDER I.—MONOMYARIA.

With but one internal muscle of attachment, and the shell marked interiorly with one subcentral muscular impression.

SECTION I.

Ligament none, or at least unknown, or replaced by a tendinous cord, which supports the shell.

Family I.—Brachiopoda.

With two opposite ciliated arms, placed near the mouth, rolled up in a spiral form when the animal is in a state of repose; mantle provided with two separate lobes before, which envelop the body. Shell bivalve, adhering directly, or by means of a tendinous cord to marine substances.

Lingula anatina. Pl. 18. f. 1. The shell is elevated on a fleshy tendinous peduncle and fixed to marine bodies.

Family II.—Rudista.

Nothing is known of the animal, nor of the ligament and hinge of the shell; the valves are very unequal; and no distinct hooks are visible.

Crania personata. Pl. 60. f. 75.

SECTION II.

Ligament not marginal, but inclosed in a hollow space under the beak, always perceptible, and never forming a tendinous cord under the shell.

Family I.—Ostracea.

Ligament interior, or at least partly so; shell irregular, foliaceous, and sometimes papyraceous. The animal has neither foot, arm, nor projecting siphon.

Anomia ephippium. Pl. 60, f. 41.
Ostrea Edulis, the Edible oyster, pl. 60, f. 73. The animals of this genus, of all others, appear to possess faculties, the lowest in the scale of animal existence. Many are fixed to rocks, or other bodies under water, and therefore are incapable of seeking food, and are entirely dependent upon such as is carried to them by the motion of the water. F. 98 shows the adductor muscle of the oyster.

Family II.—Pectenides.

Ligament either interior, or partly so, being discoverable in some through an opening in the joint; shell in general regular, compact, and not foliaceous. Some genera fix themselves to marine bodies, by a byssus, while in others the lower valve is immovably attached; and many of the pectens are at liberty.

Spondylus gæderopus. Pl. 60, f. 52.

Pecten Jacobæus. Pl. 60, f. 77. The animals of this genus possess considerable powers of locomotion, which was well known at the time Aristotle wrote. They have the power of removing themselves from one place to another, on dry land, by successive leaps. This has been fully established by recent experiments. A basket filled with the *Pecten opercularis*, or common edible scallop, has been placed on the sea shore, near the edge of the water, when all the individuals have speedily found their way to the sea. They have but a small oval foot placed on a cylindrical pedicle, between a sac-like abdomen that is suspended between the branchiæ. Some species swim with rapidity by suddenly opening and closing their valves. The mantle is surrounded by two ranges of filaments, several of the external ones being terminated by a little greenish globule. The mouth has numerous branched tentacula instead of the four usual labial leaflets.

Lima squamosa. Pl. 60. f. 72. The mantle is provided with numerous filaments of different lengths, but destitute of tubercles, and more internally, with a large border which closes the opening of the shell, and even forms a veil in front. The foot is small, and the byssus minute. The limæ swim with great rapidity, by opening and closing their valves.

SECTION III.

Ligament marginal and elongated.

Family I.—Malleacea.

Ligament marginal, sublinear, and either simple or interrupted by crenulations; shell foliaceous or more or less inequivalve.

Avicula Tarentina. Pl. 60. f. 90. *a b c d*, the mantle, the duplicate of which contains the ovarium, *f f g g*; the byssus, *h i*; the abdomen, *k*; *s*, the anal opening.

Family II.—Mytilacea.

Hinge with a sub-interior ligament, which is marginal, linear, and very entire, occupying a great part of the anterior border; shell but seldom foliaceous. Nearly the whole of this family attach themselves to marine bodies by a byssus. They have a tongue-shaped foot, by the aid of which they attach their byssus to extraneous substances.

Pinna nobilis. Pl. 60. f. 91. *a*, *b*, *c*, *d*, lobes of the mantle; *gg*, *hh*, adductor muscles; *x f*, part of the abdomen. The animal is elongated like its shell; it is destitute of projecting siphons, and has a conical foot; the mantle is close along the side of the ligament; the foot resembles a small tongue excavated by a sulcus, and is provided with a small transverse muscle situated at the acute angle formed by the valves, near which is the mouth. By the side of the vent, which is behind this large muscle, is a conical appendage, peculiar to the genus, susceptible of expansion and elongation, the use of which is unknown.

Mytilus edulis. Pl. 60. f. 71. F. 76 shows the animal.

Family III.—Tridacnites.

The shell is transversely equivalve, with the muscular impressions situated under the middle of the upper margin, and prolonged on each side; the mantle is close and perforated by three holes, through one of which passes the foot; the second furnishes an entrance and exit for the water requisite for respiration; and the third is a passage for the excretions; the two latter not being prolonged into tubes as in the Mytilacea.

Tridacna gigas. Pl. 60. f. 77. The animal is very singular, and unlike most others of this class, being pressed out of the shell in front instead of being placed within the valves. The anterior side of the mantle is widely opened for the passage of the byssus; a little below the anterior angle is another opening which transmits water to the branchiæ, and in the middle of the inferior side is a third and smaller one which corresponds to the vent, so that the posterior angle transmits nothing and is only occupied by a cavity of the mantle open at the third orifice. There is but a single transverse muscle corresponding to the middle of the valves.

The tendinous byssus by which these gigantic shells—sometimes weighing 300 pounds—attach themselves to rocks, is so thick and strong that an ax is required to sever it. Nearly allied to this species is *Tridacna squamosa*, pl. 18. f. 27.

ORDER II.—DIMYAIRA.

Shell having two distinct and lateral muscular impressions, which are deep and widely separated, being placed near the lateral extremities of the valves.

SECTION I.

Shell always inequivalve and irregular.

Family I.—Chamacea.

Shell inequivalve, irregular, and adherent; with two separate muscular impressions; ligament placed externally; the animal provided with short, separate siphons.

Chama gryphoides. Pl. 60. f. 54.

Chama antiquata. Pl. 60. f. 55. *ab*, the lobes of the mantle; c, the abdomen; *dd*, the foot.

SECTION II.—LAMELLIPEDES.

Family I.—Nayades.

This family consists of fresh water shells; the hinge sometimes provided with an irregular, simple, or cleft tooth, and a longitudinal prolonged one; sometimes destitute of any; or is furnished in its whole length with irregular granular tubercles; the posterior muscular impression compound; and the umbones often decorticated; the muscular impressions are lateral and distant, that of the posterior side being composed of two or three distinct, unequal impressions; the animal is destitute of any projecting tube or siphon; the foot is elongated, transverse, and rounded, which it protrudes between the valves, and uses to change its position.

Anadonta cygnea. Pl. 60. f. 43. *a*, the mouth, into which a bristle has been introduced; *b*, the stomach, under which the intestine makes five turns in the foot amidst the ovary, and then as it returns, runs posteriorly along the back of the animal beneath the hinge, and above the respiratory organs, passing through the midst of the heart, c, and opening at *d* above the posterior muscle closing the shells, beneath the small tube of the cloak. This description applies generally to most trivalves, but in the oyster the rectum does not pass through the heart.

Unio pictorum. Pl. 60. f. 49. The animal has two tubiform openings formed of the posterior extremity of the mantle, and furnished with numerous and small tentacula; it has no byssus; foot large, rounded and muscular; it is hermaphrodite and produces its young alive. Lives in mud, at the bottom of lakes and rivers.

Family II.—Trigonacea.

Primary teeth of the shell lamelliform, and striated transversely; ligament exterior.

Castalia ambigua. Pl. 18. f. 35.

Family III.—Arcacea.

Primary teeth of the shell small, numerous, and disposed in a line on each valve of the shell, either in a straight or interrupted series. The valves do not close perfectly in the centre, in consequence of having a horny plate or fillet placed before the abdomen of the animal, that serves as a foot, and by which it adheres to submerged bodies.

Arca Noæ. Pl. 60. f. 59.

Arca barbata. Pl. 60. f. 70. *a*, the foot.

Pectunculus Pilosus. Pl. 60. f. 56. F. 74, animal of do.

Family IV.—Cardiacea.

Primary teeth of the shell irregular, both in their form and situation, and having generally one or two lateral teeth. In the animal, the mantle is open before, and there are besides, two separate apertures, one for respiration and the other for the fæces, which are prolonged in tubes, sometimes distinct, and at others united in one single mass. There is always a transverse muscle at each extremity, and a foot generally used for locomotion. Those which are provided with long tubes always live in ooze or sand.

Isocardia cor. Pl. 60. f. 98. In all the species the ligament of the shell is exterior, and very short; two distinct muscular impressions. The animal is furnished on each side with two unequal tubes, ciliated at their orifices, and on the other side with a large muscular foot.

Cardium rusticum. Pl. 60. f. 60. *a e*, the tracheæ; *a*, part of the abdomen; *bb*, the branchiæ; c, the adductor muscle.

Family V.—Conchacea.

Shell with three primary teeth, at least in one valve, and the other with a similar number, or less in some species; sometimes provided with lateral teeth. The animal has generally two tubes or siphons projecting from its mantle, one of which answers the purpose of a passage for the water to the branchiæ, and the other for dejected matters; the foot is lamelliform. All the animals of this family inhabit sand or mud.

Subdivision I.

Generally destitute of lateral teeth; inhabiting the ocean; siphons of the animal elongated and unequal; the foot broad and projecting.

Venus Verrucosa. Pl. 60. f. 39.

Chytherea Chione. Pl. 60. f. 48.

Artemis orbiculata. Pl. 60. f. 53.

Subdivision II.

Fresh water shells covered with a spurious epidermis, and having lateral teeth.

Cyclas cornea. Pl. 60. f. 50. Animal provided with a double united tube at the posterior termination of the cloak, foot long, and powerful for the size of the animal.

Piscidium obliquum. Pl. 60. f. 51.

SECTION III.—TENUIPEDES.

Family I.—Nymphacea.

Shell never having more than two primary teeth in each valve; frequently gaping at its lateral extremities; ligament exterior. The foot of the animal is small, and often compressed; the species all inhabit the shores of the sea.

Donax trunculus. Pl. 60. f. 46. The animal has two long slender tubes, which are received into a sinus of the mantle; and provided with a broad foot. F. 47. The right valve removed. *a a*, the adductor muscles; A, the foot; *s s*, the right lip; *m n*, the two lobes of the branchiæ; *b d*, *c e*, the two tracheæ; the left vein is at *i*.

Tellina planata. Pl. 60. f. 97.

Family II.—Lithophagi.

The shells gape more or less at their anterior side; ligament exterior; they bore into rocks and clay, without the aid of accessory shells, but by what means naturalists have not yet discovered.

Venerupis irus. Pl. 60. f. 69.

Family III.—Corbulacea.

Shell inequivalve, with the ligament placed interiorly.

Pandora rostrata. Pl. 18. f. 72.

Family IV.—Mactracæa.

Shell equivalve, frequently gaping at the lateral extremities; ligament placed interiorly, or partly exteriorly; animal with the foot small and compressed; the tubes are united and short.

Mactra Neapolitana. Pl. 60. f. 40. *b c*, the trachæa; *d*, the foot.

SECTION IV.—CRASSIPEDES.

The mantle, either entirely or in part united before the foot, thick, placed posteriorly; the shell gaping when shut.

Family I.—Myaria.

Shell with a broad spoon-shaped tooth in each valve, or in one only, and gaping at both lateral extremities, or at one only; ligament placed interiorly. Live sunk in ooze or sand.

Mya arenaria. Pl. 60. f. 45. The mantle opens at the anterior extremity, or near the middle only, for the passage of the foot, and extended from the other end with a double tube which projects from the shell, whose extremities are always gaping; the double tube forms a fleshy cylinder.

Family II.—Solenides.

Shell transversely elongated, without accessory pieces, and gaping at the lateral extremities only; ligament placed exteriorly; the foot issues from the anterior extremity or from that side in which the teeth are nearest.

Solen Vagina. Pl. 60. f. 96. The foot of the animal is conical, which enables it to burrow with great facility in the sand. *e*, the trachiæ; *k*, the cloak; *n n*, adductor muscles; the foot, *b* c.

Family III.—Pholadaria.

Shell bivalve, with accessory pieces to the valves; they generally gape much anteriorly. The whole family are borers.

Pholus dactylus. Pl. 60. f. 95. The mantle is reflected externally upon the hinge, where it sometimes contains two or three supernumerary calcarious bodies; the foot issues through the aperture on the side next the mouth, where it is widest, and from the opposite one project the two tubes, which are united and susceptible of inflection in every direction. F. 89 shows the adductor muscle of the pholas.

Family IV.—Tubicola.

Shell contained in a testaceous sheath, distinct from its valves, incrusted entirely or in part in the wall of this tube, or projecting outwards.

Teredo navalis. Pl. 60. f. 16. The mantle extended in a tube much longer than the two small rhomboidal valves, and terminated by two short tubes, the base of which is furnished on each side with a stony and movable operculum. These acephala, while quite young, penetrate and establish their habitations in submerged pieces of wood, such as piles and the bottoms of ships; completely destroying them in a very short space of time. *a*, the œsophagus, which is very short, and lies on the left side of the neck; the canal swells out, and becomes a stomach, *b*, which, in its external appearance, is a large bag, extending the whole length of the cavity of the abdomen, but, when laid open, it is found to have a septum, *c*, dividing it longitudinally into two equal cavities, except at the lowest part, where they communicate at *d*, the septum being wanting. The intestine has its origin close to the termination of the œsophagus, is extremely small, dilates into a cavity containing a hard, white spherical body, the size of a pin's head, and then makes a turn upon itself. The course it follows is shown by the letters *e e*.

CLASS CIRRIPEDA.

Following the general practice, we treated the coverings of the Cirripeda as a branch of Conchology; and we now proceed with the plan we adopted in following up Mollusca, by the characters of the animals which inhabit the testaceous Cirripeda.

The Cirripeda form an intermediate group between the Mollusca and Articulata. The bodies are enveloped in a mantle, and testaceous plates or valves, which are nearly allied to those of the Acephala. The mouths of the animals are provided with lateral jaws, and the abdomen with filamentary jointed processes, named *cirri*, arranged in pairs, composed of numerous little ciliated articulations, and corresponding to feet or fins, similar to those which exist under the tail of crustaceous animals. Their heart is situated in the back, and the branchiæ emanate from the sides; the nervous system forms a series of ganglions, on the lower part of the abdomen. These cirri, however, may be considered as analogous to the articulated appendages of some species of Teredo, while the ganglions are in some measure repetitions of the posterior ganglion of the bivalve Mollusca. The position of these animals in the shell is such, that the mouth is at the bottom, and the cirri near the orifice. Between the last two cirri is a long fleshy tube, that has sometimes, but erroneously, been taken for their proboscis, and at the base of which, near the back, is the anal opening. Internally, a stomach is found inflated by a multitude of small cavities in its parietes, which appear to fulfil the functions of a liver, a simple intestine, a double ovary, and a double serpentine oviduct, whose walls produce the prolific fluid, and which, prolonged in the fleshy tube, open at its extremity. The animals of this class are incapable of locomotion, being always fixed. This class was all ranked under a single genus by Linnæus, by the title of Lepas. Brugieres divided them into two, and Lamarck has subdivided them still farther, at the suggestion of Dr Leach, and they now form a class of themselves.

The animals of this class are always protected by a multivalve shelly covering, which is composed of a number of separate pieces; these are connected by a membrane in the *pedunculata*, and those of the *sessilia*—six in number—are articulated at their sides, and kept together from their base, being attached to a calcarious plate, which is firmly attached to some extraneous substance. These last form a conical covering, open at the top, which is protected by an operculum or lid, composed of four pieces.

The first order of cirripeda have but five valves, and these are placed on the summit of a tubular, membranous peduncle, varying in length in different species. In one genus, besides the five principal valves, other smaller ones are found, which are termed accessory valves. All the animals are hermaphrodite and marine.

The characters of the class are, soft animals, destitute of head and eyes, covered with a plurality of shells, and always fixed to a certain spot; the bodies are inarticulated, provided with a mantle, tentacula, and cirri; arms issuing from above, and many-jointed.

ORDER I.—PEDUNCULATA.

The body compressed, and supported on a tubular peduncle.

Otion Cuvieri. Pl. 19. f. 26. Body pedunculated, ventricose above, and enveloped in a membranous tunic; two lobes disposed in the form of horns directed backwards, open at their extremity, truncated and placed at the summit of the tunic; having a lateral opening with many articulated arms or feelers.

Cineras vittata. Pl. 19. f. 27. Body seated on a peduncle, enveloped in a membranous tunic, with an anterior opening situate below the summit, and numerous slender, articulated arms.

Pollicipes mitella. Pl. 19. f. 28. Body resting on a tubular, tendinous tubercle, with many tentacular arms.

Anatifa vitrea. Pl. 19. f. 30. With a compressed mantle, open on one side and supported on a tubular tendinous peduncle; it has twelve pair of ciliated cirri or arms, six arising from near the summit on each side, those nearest the mouth being the thickest and shortest; the branchiæ are elongated pyramidal appendages, that adhere to the external base of the whole of the cirri or part of them.

ORDER II.—SESSILIA.

Body destitute of a peduncle, and inclosed in a shell of various parts, fixed immovably by its base, with a testaceous lamina to extraneous marine bodies; the mouth at the upper and anterior part of the body. In the interior of the opening is placed an operculum formed of two or four movable pieces, which the animal opens in the centre while projecting its tentacular arms.

Pyrgoma crenata. Pl. 19. f. 31. Operculum bivalve.

Balanus communis. Pl. 60. f. 94. *aa*, the venter; *vv*, the liver; *xx*, the ovarium; *h*, the spermatic ducts; AB, the œsophagus. Arms numerous, unequal, ciliated and articulated, each composed of two cirri supported on a peduncle, and exsertile; placed in two rows; mouth with four transverse dentated jaws, and four ciliated appendages resembling palpi. The operculum consists of four pieces.

CLASS ANNELIDES.

This class is the first of the great division Articulata, consisting of animals which have their bodies or members composed of articulated rings.

The characters of the Annelides, are, the body soft, more or less elongated, and either naked or enclosed in a tube, and divided into a number of segments; and are the only animals devoid of a backbone, which have red blood circulating in a double system of complicated vessels.

Their nervous system consists in a double knotted cord, like that of insects. Some species have a head, and others are devoid of one; when it exists it is merely a slight anterior thickening, distinct from the first segment of the body, and upon which the eyes and antennæ are placed. The antennæ consist of articulated filaments, sometimes short and thick, and never exceed five. They have either two or four eyes, situate behind the antennæ. The tentacula are either situated on the head or fore part of the body, they consist of articulated filaments, or papillæ more or less elongated. They are provided with a fleshy contractile proboscis, of either one or two rings, inclosing horny or calcarious jaws. The body of the Annelides in many species is naked, and free from hairs; some are furnished with contractile bristles.

The whole class respire by branchiæ, and inhabit the waters, sand, mud, or moist earth. The branchiæ are extremely variable in form and situation; as are also the tubes or sheaths, which are either membranous or horny, incrusted exteriorly with minute fragments of shells or grains of sand; in others they are solid testaceous tubes. They are all carnivorous, sucking the blood of other animals; and are hermaphrodite.

ORDER I.—SEDENTARIÆ.

The animals inhabit a testaceous tube, which they never leave; they are destitute of eyes; the branchiæ are situated at one end of the body. The animal is elongated, worm-shaped, having the sides of the body provided with subulate short bristles; and also with hooked bristles to enable it to move in its tube.

Family I.—Serpulacea.

Branchiæ separate, or covered by an operculum; tube, solid and testaceous; destitute of tentacula, eyes, or jaws; body furnished on the sides with setaceous papillæ, and hooked retractile bristles.

Serpula vermicularis. Pl. 60. f. 82. With a tubicular, elongated, slightly depressed body, and posteriorly attenuated, and with narrow segments; provided with small fasciculi of subulate bristles, placed in one row on each side. and hooked bristles; branchiæ terminal, fan-shaped, deeply cleft into five digitations, pinnated or plumose; mouth terminal, situated between the branchiæ and surmounted by a pedicellate funnel-shaped, or clavate operculum.

Family II.—Amphitritæa.

Branchiæ neither separated nor covered by an operculum, and disposed towards the anterior part of the body; with a horny or membranous tube, more or less arenaceous; the branchiæ are placed at or near the anterior extremity, they are sometimes large, projecting above the mouth, and sometimes they are short. Many of the animals have tentacula, but all of them are destitute of eyes, proboscis, or jaws.

Amphitrite magnifica. Pl. 60. f. 81. Body tubicular, cylindrical, elongated, and posteriorly attenuated, having numerous segments and a row of setiferous papillæ, subulate bristles in bundles, and hooked, golden-coloured setæ, arranged like a crown, or disposed like a fan; branchiæ terminal; mouth terminal, situate between the branchiæ, and encircled with numerous tentacula.

Family III.—Maldaniæ.

The branchiæ are indeterminate; and the tube is open at both ends.

Dentalium entalis. Pl. 60. f. 62. The animal is destitute of articulations or lateral setæ, but is provided with a membranous tube, into which is inserted a foot, or fleshy conical operculum, which closes its orifice; on the base of the foot is a small flattened head, with plumose branchiæ on the nape.

Family IV.—Dorsaliæ.

The branchiæ are dorsal, or disposed longitudinally along the body.

Silliquaria anguina. Pl. 19. f. 51.

ORDER II.—ANTENNATÆ.

The head is antenniform, provided with two eyes, and a projectile proboscis, frequently armed with jaws, and setiferous retractile pediform papillæ; branchiæ disposed longitudinally.

SECTION I.

Branchiæ in the form of complicated leaves or tufts, or very ramose, always large and apparent; destitute of spines.

Family I.—Amphinomæ.

Branchiæ and cirri placed superiorly at all the pairs of pediform papillæ, and having no jaws.

SECTION II.

Branchiæ in the form of small crests or laminæ, or filamentous and pectinated on one side; sometimes not distinct.

Family II.—Eunicæ.

While the branchiæ are distinct, all the pediform papillæ are placed without interruption; jaws numerous, and always more than two, but fewer on the right than on the left side; destitute of the first pair of feet.

Family III.—Nereides.

When the branchiæ are distinct, there are superior cirri on all the pairs of pediform papillæ; two jaws or none.

Spio quadricornis. Pl. 32, f. 14. Body elongated, slender, and provided with a row of tufts of very short bristles; the branchiæ are lateral, filiform, but not divided; tentacula two, very long and filiform or setaceous; mouth terminal; and with two or four eyes.

Family IV.—Aphroditæ.

The upper branchiæ and cirri alternating in their position to the twenty-third or twenty-fifth pair of pediform papillæ; having four jaws.

Halithea aculeata. Pl. 32, f. 4. Body oblong, hairy, spinous, and shining with iridescent splendour; dorsal scales with fuscous dots.

ORDER III.—APODES.

Animals destitute of feet, or setiferous and retractile papillæ; when provided with branchiæ, they are disposed interiorly along the body; but they have no antenniferous head.

Although the animals of this order have red blood, and a true circulation, they are otherwise the most imperfect in their form. They are destitute of head, tentacula, and pediform papillæ; their branchiæ are situated internally, either in or under the skin. They are usually naked, and have no retractile spines.

Family I.—Echiureæ.

Body with bristles projecting, but not retractile.

Lumbricus terrestris. Pl. 32, f. 39. The earth worm. Body flesh-coloured, composed of one hundred and forty annular sections, and a prominent annular belt one-third its length; on each side of the belly there is a row of minute spines to assist in motion.

Family II.—Hirudineæ.

Body without projecting bristles.

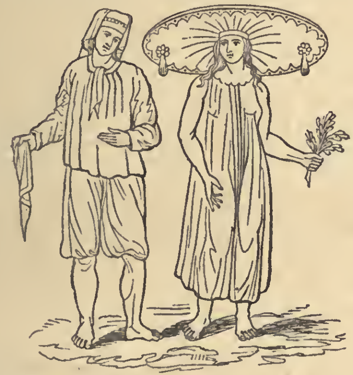
Hirudo geometra. Pl. 32, f. 13. Leech. The body is oblong, blunt, and slightly depressed, widening posteriorly, and composed of numerous contractile segments; the posterior extremity terminated by a broad prehensile disk; the mouth is naked, capable of great dilatation, armed interiorly with three teeth or horny jaws; destitute of eyes; anal opening above, near the posterior disk.

MOLOCH (Molach, or Molech, lord and king); an idol of the Ammonites, according to some writers, a symbol of the sun. His image was an iron statue, with a human body, the head of an ox, and extended arms. The statue was heated by a fire placed in the lower part, and children were placed, as offerings, in the arms of the horrid king, where they perished, while the priests drowned their cries with the noise of musical instruments.

MOLOSSUS. See *Rhythm.*

MOLTO (Italian, *very*, or *much*); a word used in conjunction with some other, by way of augmentation, as *molto allegro*, very quick, *molto adagio*, very slow.

MOLUCCAS, or SPICE ISLANDS; an archipelago between Celebes and New Guinea, having the Pacific ocean on the north, the straits of the Moluccas separating them from Celebes on the north-west, and the sea of the Moluccas on the south-west, between lat. 3° N. and 5° 30′ S., and lon. 124° 20′ and 132° 20′ E. The Little Moluccas are Ternate, Motir, Machian, Bachian, and Tidore; the Great Moluccas are Gilolo (q. v.), Ceram, Amboyna (q. v.), Banda (q. v.), &c. Most of the islands have volcanic traces, and many of them have active volcanoes. The heat is excessive, but is often moderated by the frequent rains, and, during a part of the year, by the prevalence of the north wind: the climate is healthy. The productions are sago, bread-fruit, cocoas, and all sorts of tropical fruits: the clove-tree is most plentiful in Amboyna, and the nutmeg-tree in Banda. Ebony, iron-wood, teak, a species of laurel yielding an aromatic oil, with other rare and valuable trees, are found in the forests. The barbaroussa, opossum, birds of paradise, cassowaries, &c., are among the animals. Hidden rocks, sand-banks, and shoals, make the navigation in this sea of islands dangerous. The aborigines are called *Harafores*, or *Alfores*, and are an agricultural people. The Malay is the prevailing language in the Moluccas. The following cut represents the costume of the inhabitants.



There are also many inhabitants of Chinese, Japanese, and Arabian extraction. When the Portuguese discovered the Moluccas (1511), the Arabians were already settled here, and Mohammedanism, much mingled, however, with paganism, had become the prevailing religion. The inhabitants were severely oppressed by the Portuguese, who perpetrated the most revolting cruelties in these islands, remote from the seat of the general administration (Goa), and no less harshly treated by the Dutch, who converted the produce of the soil to their own use, for more than 150 years, prevented the free cultivation of the land, and opposed every attempt to establish manufactures, and any kind of improvements which could supply the wants of the people. The Portuguese had almost entirely the monopoly of the spice trade till the beginning of the seventeenth century, when the Dutch took the islands from them. The new masters kept possession till 1796, since which time the islands have been twice conquered by the British. By the peace of Paris, they were again restored to the Dutch. These occupy only Amboyna and Banda, but the chiefs of the other islands are more or less tributary to them. After the Dutch had been about twenty-six years in possession of the Moluccas, and the monopoly of the spices, they found it advantageous to transplant the spice-trees to the southerly group of islands, Amboyna and Banda. In 1638, an agreement was made with the king of Ternate, who was subject to them, and the petty rulers of the other islands, by which it was stipulated that all the spice-trees on the islands belonging to them should be rooted up, and that no more should be planted; in consideration of which an annual sum was paid to the king and the nobility of Ternate, and the other princes. To ensure the fulfilment of this agreement, the Dutch erected three strong fortresses in Ternate, and about nine others in the other islands. The spice-trees, which again sprung up in these islands, were destroyed every year, as far as the woods and wild beasts permitted them to be reached; and, in order to see that this was properly executed, and to prevent the smuggling of spices, the governor of Amboyna went through his government every year, with a squadron of from twenty to fifty ships. But, notwithstanding these precautions, the spice-trees, the natural growth of the islands, continually sprung up where the power of the Dutch could not penetrate, and the British carried on considerable smuggling business with the oppressed natives. In other respects, the Moluccas are sparingly endowed by nature. They are wanting in water, and are obliged to procure rice and other necessaries of life from Celebes. The want of water is, in some measure, supplied by cocoa-trees, which grow in abundance, and the fruit of which contains a nourishing drink.

MOLWITZ; a village in the circle of Breslau, near Brieg, celebrated for the battle between the Prussians and Austrians, April 10, 1741, which was terminated in favour of the former by the exertions of Schwerin. Frederic II. (the Great) was present. He acknowledged that he did not then understand the art of war, and had committed important mistakes, but observed, at the same time, that the battle had been a good school for him and his soldiers.

MOLYBDENUM; a metal which has not yet been reduced in masses of any considerable magnitude, but has been obtained only in small, separate globules, of a blackish brilliant colour. It is extremely infusible. By heat, it is converted into a white oxide, which rises in brilliant, needle-formed flowers. Nitric acid readily oxidizes and acidifies the metal; nitre detonates with it, and the remaining alkali combines with its oxide. Molybdenum unites with several of the metals, and forms with them brittle compounds. The specific gravity of the pure metal is 8·611: it has three degrees of oxidation, forming two oxides and one acid. The *molybdic acid* is composed of forty-eight parts of molybdenum and twenty-four of oxygen; it has a sharp metallic taste, reddens litmus paper, and forms salts with alkaline bases; specific gravity, 3·4. It is very sparingly soluble in water; but the molybdates of potash, soda, and ammonia, dissolve in that fluid, and the molybdic acid is precipitated from the solutions by any of the strong acids. The *protoxide* of molybdenum is black, and consists of one equivalent of oxygen and one equivalent of molybdenum. The *deutoxide* is brown, and contains twice as much oxygen as the protoxide. Berzelius has formed three chlorides of this metal, the composition of which is analogous to the compounds of this metal with oxygen. The native *sulphuret* of molybdenum is composed of forty-eight parts, or one equivalent of molybdenum, and thirty-two parts, or two equivalents of sulphur. It occurs in most primitive countries, disseminated in granite, or gneiss rocks, in thin plates of a foliated structure, soft, flexible, slightly soiling the fingers, and greasy to the feeling; colour pure lead-gray; lustre metallic; specific gravity 4·591. It does not melt before the blow-pipe, but emits sulphureous fumes. It is nowhere found in large quantities, although known to exist in numerous places. Its principal European localities are Altenberg, in Saxony, and Schlaggenwald, and Zinnwald, in Bohemia. In the United States of America the largest and best pieces have been found in the gneiss quarries of Haddam, Connecticut, where plates half an inch thick, and four inches over, have been met with. At this place, it often exhibits the low six-sided prism. It also occurs at Brunswick, in Maine, in the same rock, and at Chesterfield, Massachusetts, in granite.

MOLYN, Peter. See *Tempesta.*

MOLYNEUX, William; a mathematician and astronomer, born at Dublin, in 1656, whence he removed to the Inner Temple, London, in 1675. Being possessed of a competent fortune, he never engaged in the law as a profession, but, returning to Ireland in 1678, occupied himself with researches into various departments of natural philosophy, particularly astronomy. Having been appointed joint-surveyor of public works and chief engineer, he had a commission to examine the principal fortresses in Flanders. After his return, in 1686, he published his *Sciothericum Telescopicum*, containing an account of a telescope-dial of his invention. In 1689, he removed to London, on account of the political commotions of Ireland, and, in 1692, published a treatise on dioptrics, under the title of *Dioptrica Nova* (4to). Going back to his native country, he was chosen member of parliament for Dublin, in 1692; and, in 1695, he was elected representative of the university. He died October 11, 1698. Mr Molyneux was a fellow of the Royal Society, and a contributor to the Philosophical Transactions.—His son, *Samuel Molyneux*, who was secretary to George II., when prince of Wales, was also a cultivator of the mathematical sciences, and made some improvement in the construction of telescopes, of which doctor Robert Smith published an account, in his treatise on optics.

MOLZA, Francesco Maria, an Italian poet, was born at Modena, in 1489, of a distinguished family, lived principally in Rome, on terms of friendly intercourse with the most eminent scholars, and died 1544. His talents would have opened to him a brilliant career, had not his excesses obstructed his progress. Among his poems, the stanzas on the portrait of Giulia Gonzaga, and the *Ninfa Tiberina*, a poetical picture in *ottave rime*, are the most highly esteemed. His *Capitolo in Lode dei Fichi* is full of indelicacies; Annibal Caro wrote a commentary upon it. Molza is favourably known as a Latin poet. A complete collection of his works first appeared in 1747, with an account of his life, by the abbate Serassi.

MOMENT; an indefinitely small portion of time, having the same relation to duration as a point has to a line.

MOMENTUM, in mechanics, is the same with *impetus*, or quantity of motion, and is generally estimated by the product of the velocity and mass of the body. This is a subject, however, which has led to various controversies between philosophers, some estimating it by the mass into the velocity, as stated above, while others maintain that it varies as the mass into the square of the velocity; but this difference seems to have arisen rather from a misconception of the term than from any other cause, those who maintain the former doctrine understanding *momentum* to signify the momentary impact, and the latter the sum of all the impulses, till the motion of the body is destroyed.

MOMIERS; a Protestant sect, of recent origin, in Geneva and some other parts of Switzerland, founded by Empeytaz, a student of theology and follower of the baroness von Krüdener, about 1813. He held conventicles for the edification of those who were not satisfied with the ordinary religious exercises; and, when he had completed his course of theology, the consistory of Geneva required of him a promise to discontinue these private meetings. This Empeytaz refused, and published a work on the divinity of Christ, in which he charged the clergy of Geneva with denying the divinity of Christ. The clergy of Geneva then required of all young candidates a promise to abstain from treating of the nature of Christ, original sin, grace and predestination, in the pulpit. This excited some discontents, and Malan, a clergyman of Geneva, at the head of the dissatisfied, and in connexion with Mr Drummond, an Englishman, with Empeytaz and others, formed a new church, or Orthodox church, and attacked their adversaries in pamphlets, with charges of Arianism, Socinianism, deism, and atheism. The Genevese clergy kept silence; and, since 1823, Malan has erected a house of worship, and administers the Lord's supper. His doctrines are of a mystical character. The name *Momiers* was at first given to the sect by way of contempt (from *momerie*, mummery), but has since been used as their appropriate designation. See *Hist. véritable des Momiers* (Paris, 1824); *Geschichte der sogen. Momiers* (Basil, 1825.)

MOMUS; the god of satire and pleasantry among the ancients. He was son of Nox, according to Hesiod. He blamed Vulcan, because, in the human form, which he had made of clay, he had not placed a window in the breast, by which whatever was done or thought there might be easily brought to light. He censured the house which Minerva had made, because the goddess had not made it movable, by which means a bad neighbourhood might be avoided. In the bull which Neptune had produced, he observed that his blows might have been surer if his eyes had been placed nearer the horns. Venus herself was exposed to his satire; and when the sneering god could find no fault in the body of the goddess, he observed that the noise of her feet was too loud for the goddess of beauty. These illiberal reflections upon the gods were the cause that Momus was driven from heaven. He is generally represented raising a mask from his face, and holding a small figure in his hand.

MONA; the ancient name of the island of Anglesea. (q. v.) The marquis of Anglesea was created duke of Mona in 1831.

MONACO; an Italian principality, lying between the Sardinian province Nizza (Nice) and the Mediterranean, with a population of 7000 inhabitants, and a superficial area of 535 square miles. In the tenth century, the emperor Otho I. conferred it on a prince of the house of Grimaldi, which became extinct, in the male line, in 1731. In 1641, the reigning prince, having put his territories under the protection of France, was created duke of Valentinois. The daughter of the last prince having married Francis de Matignon (1716), the princely and ducal titles passed to the French family of Matignon. In 1793, Monaco was incorporated with France, but, in 1814, was restored to its princes, and placed under the protection of Sardinia. The capital, Monaco (Monœci Arx), with 1200 inhabitants, is a fortified place, situated on the sea, in the midst of olive, orange and lemon groves. Lat. 43° 43′ N.; lon. 7° 22′ E.

MONAGHAN; a county of Ireland, in the province of Ulster, bounded N. by Tyrone, E. by Armagh, S. by Cavan, and W. by Fermanagh. It is above thirty miles in length, and twenty in breadth. The surface is hilly, and abounds with small lakes and bogs. The most important of the rivers are the Lagan, Annalee, Ballyhays, Fin, Fane, Myrvale, and Blackwater: none of these are navigable. The deep soil of Monaghan is favourable to the culture of flax, a favourite crop here; and all the usual crops are sown, wheat only excepted, to which the soil is not found congenial. Monaghan is divided into five baronies, Cremourne, Dartry, Farney, Monaghan, and Trough. In these the principal towns are Castleblaney, Ballybay, Clones, Carrickmacross, Monaghan, the county town, Smithsborough, and Newbliss. The manufacture of linen constitutes the chief employment of the population. See *Ireland* and *Ulster*.

MONALDESCHI. See *Christina, queen of Sweden*.

MONARCHY. See *Political Institutions*.

MONASTERY. Monastic seclusion is found, even in the times previous to the Christian era. The inclination to a solitary life arose with the corruptions of society. The better disposed persons, who felt themselves unequal to resist these corruptions, sought, in solitude, a protection against temptation. That indisposition to action, and that fondness for undisturbed contemplation, which is still remarked among the Hindoos, existed among the earliest inhabitants of Southern Asia, and gave rise to the most ancient Oriental philosophy, whose tendency to a contemplative life, aspiring to shake off the fetters of the body and sense, gave to retirement from the world the charm of a peculiar sanctity. To this was added the opinion, that transgressions may be best atoned for by abstinence from all the pleasures of life, and from all society of men, and thus, according to an ancient notion, popular throughout the East, the Deity might be appeased. Anachorites, hermits, recluses and monks are therefore found, in the ante-Christian times of Asiatic antiquity (see *Gymnosophists*); and, at the present time, the countries which profess the religions of Brama, Fo, Lama, and Mohammed, are full of fakirs and santons, tanirs, or songesses, talapoins, bonzes and dervises, whose fanatical and absurd penances are rather arts of deception than fruits of piety. The ancient Hebrew people, also, had such devotees, as its Nazarites, to whom Moses gave peculiar privileges; and the life of the Essenes and Therapeutes, who flourished in Palestine and Egypt about the times of Jesus, was entirely formed on the idea of separation from the world, and of monastic discipline and piety, which we afterwards see prevalent in the better period of Christian monasticism. Among the Christians, whose religion strictly distinguishes the corporeal and the spiritual, and, moreover, since the third century, has been impregnated with Gnostic and New Platonic ideas of incorporeality and elevation above the world of sense (see *Saints*), solitary life began to be esteemed, as early as the fourth century. See *Chrysostom*.

Monasteries were first founded in the deserts of Upper Egypt, where Antony, commonly called the *Great*, collected a number of hermits, about the year 305, who, for the sake of enjoying the benefits of retirement from the world in each other's society, built their huts near each other, and performed their devotional exercises in common, as the monks of Palestine did at a later period, and as those of Abyssinia do at the present day. More close than this connexion, which was called *Laura* (see *Anachoret*), was that founded by his disciple Pachomius, in the middle of the fourth century. He built a number of houses, at a small distance from each other, upon the island of Tabenna, in the Nile, each of which was occupied by three or four monks (*monachi*) in cells, who were all under the superintendence of a prior. These priories formed together the *cœnobium*, or monastery, which was under the care of a superior, the abbot, (from *abbas*, father), higumen or mandrite, and were obliged to submit to uniform rules of life. At the death of Pachomius, in 348, the monastic colony, at Tabenna, amounted to 50,000 persons. The districts in Palestine, Syria, and Armenia were filled with Cœnobites, and institutions of the same kind arose in and about the towns, in which a strict confinement within the walls of the establishment, was to preserve the inmates from the temptations of the world around them, and to supply the place of the solitude of deserts. Hence the name of *cloisters*, from *claustra*, enclosures. The monastic life, at first freely chosen by men alone, and therefore restrained by such laws only as each one thought fit to impose upon himself, for promoting the ends of solitary life, was subjected, by St Basil, to stricter rules, about the middle of the fourth century, when female monasteries, or convents of nuns (a word said, in Coptic, to signify *pure*), were instituted, and persons of all ages and stations entered the establishments. By means of these rules, the same discipline was kept up in all the monasteries through the East. Still there was not, in the fourth or fifth centuries, any thing like regular monastic vows, or public profession; except that the entrance into a monastery was regarded as a tacit devotion of one's self to a life of purity and abstinence from worldly pleasures, and a promise of obedience to the rules and restrictions of the institution. These vows were introduced in the sixth century, by St Benedict. It may be chiefly ascribed to his strict and judicious regulations, first established in a monastery founded by him at Monte Casino, near Naples, in 529, and afterwards introduced into all the monasteries of the West, that these houses now became the dwellings of piety, industry, and temperance, and the refuge of learning, driven to them for shelter from the troubles of the times. Missionaries were sent out from them; deserts and solitudes were made habitable by industrious monks; and, in promoting the progress of agriculture and civilizing the German and Sclavonian nations, they certainly rendered great services to the world, from the sixth century to the ninth. But it must be admitted that these institutions, so useful in the dark ages of barbarism, changed their character, to a great degree, as their wealth and influence increased. Idleness and luxury crept within their walls, together with all the vices of the world, and their decay became inevitable, when, by a custom first introduced by the Frankish kings, and afterwards imitated by other princes, of bestowing monasteries upon the nobility for the sake of their income, they came under the care of lay abbots or superiors, who, thinking only of the enjoyment of the revenue which they yielded, did nothing to maintain discipline among the monks and nuns, daily becoming more irregular, and when they were robbed and oppressed, or left wholly to their own government (in consequence of the privileges and exemptions they had obtained) by the bishops, who were originally their overseers, but had now lost their fondness for a monastic life. A few only, by means of the convent schools (founded by Charlemagne, for the education of the clergy), as, for instance, those at Tours, Lyons, Cologne, Treves, Fulda, Osnabruck, Paderborn, Wurtzburg, &c., maintained their character for usefulness and respectability till the ninth and tenth centuries. The monastery at Clugny, in Burgundy, first led the way to the reform, so generally acknowledged to be necessary. This was founded in the year 910, and was governed by the rules of St Benedict, with additional regulations of a still more rigid character. A considerable number of monasteries in France, Spain, Italy, and Germany, were reformed on this model, while others gave to the Benedictine rules a new form, and founded, in the eleventh and twelfth centuries, several orders with affiliated monasteries, which, as branches of the old Benedictine order, composed so many monastic communities, closely united by a proud and jealous spirit of confederation. With the reputation of renewed sanctity, the monasteries acquired new influence and new possessions. Many of them ("exempt monasteries") released themselves from all superintending authority, except that of the pope himself, and acquired great wealth in the time of the crusades, when those who adventured upon these expeditions left them their estates in trust till their return, or even the reversion of them in case of their death abroad. The privilege of inviolability, which had been granted, by common consent, to all monastic establishments, during the feuds of the middle ages, had induced many, who could find no better security for their property, in those days of rapine and violence, to place it under their protection. In this manner it happened that, as the zeal for reformation abated, and their influence was confirmed, new abuses sprang up in those establishments; and, as the authority of their spiritual and temporal lords was lessened by numerous exemptions, and was of little avail, when opposed by the combination of powerful religious orders, who had acquired great strength in all the countries of Europe, from the protection of the popes, the character of each monastery came, at last, to depend chiefly upon that of the abbot who was at its head.

The number of monasteries was much diminished at the time of the reformation, when the rich estates of the establishments which were deserted by the monks and nuns, in Protestant states, were in part appropriated by the sovereign to his own use, and partly devoted to the founding and supporting of institutions for the purposes of education, or transferred to universities and academies, were bestowed as rewards upon deserving ecclesiastics (as was the case with the abbeys in Lower Saxony and Wurtemburg), or were employed for the support of noble ladies until they married, as in Hesse, Holstein, Mecklenburg, &c. (For the suppression of the monasteries in England, under Henry VIII., see *Henry VIII.*) In Catholic countries, they retained their original constitution till the eighteenth century; but, from the influence of the spirit of the age, they sank in the public estimation, and were obliged, as the papal power diminished, to submit to many restrictions, imposed upon them by Catholic princes, or to purchase immunity at a high price. The benefits which they had formerly conferred upon the world, as the preservers of literary treasures; as places of refuge for the poor and the persecuted; as institutions for the education of youth; as places of retirement for persons of distinction who had outlived their usefulness, or were weary of the world; as schools for the mild correction and improvement of erring members of the human family,—appeared unimportant in the eyes of politicians and philosophers, when compared with their injurious effect upon the increase of population by their encouragement of celibacy; upon the public welfare, by their incessant grasping at the estates of wealthy persons, who had committed their children to their care; upon industry, by the idleness of their inhabitants; and upon public morals, by the sins which were notoriously committed within their walls. In this light were monasteries regarded by the greater portion of enlightened men, when, in 1781, the houses of some orders were wholly abolished by Joseph II., and those which he suffered to remain were limited to a certain number of inmates, and cut off from all connexion with any foreign authority. In France, the abolition of all orders and monasteries was decreed, in 1790, which example was followed by all the states incorporated with France, as well as by all the other Catholic states upon the continent of Europe, in the nineteenth century under the protection of Napoleon, with the exception of Austria, Spain, Portugal, Naples, Poland, and Russia. This measure seems to have been the result of financial calculations rather than the dictate of true humanity. In Prussia, provision was made for the monks who were dispossessed; and, after Joseph's example, the wealth obtained by secularizing the monasteries was appropriated to the support of churches and schools; but where the French system prevailed, these estates were thrown into the public treasury. Late events have much improved their condition in Italy; and Pius VII., in his concordate with France, Bavaria, and Naples, made provision for the maintenance of those already existing, and the foundation of new ones in those countries. In Austria, many monasteries have been suffered to become extinct. Not a few of these institutions render themselves useful, by the instruction of youth, especially of the female sex, and by taking care of the sick. For the monastic vows, see the next article; for further information, see *Orders, religious*, *Abbot*, *Anachoret*, &c.

MONASTIC VOWS are three in number; poverty, chastity, and obedience. The vow of poverty prevents the monks from holding any property individually; monasteries, however, may hold corporate property; for the Roman Catholic church makes a distinction between the high, higher, and highest degrees of poverty. In the first case, a monastery may possess portions of real estate, yet not more than enough for its support; as the Carmelites and Augustines. In the second, a monastery cannot hold any real estate, but only personal property; as books, dresses, supplies of food and drink, rents, &c.; as the Dominicans. The third permits neither the holding of real nor of personal property; as is the case with the Franciscans, and especially the Capuchins. The vow of chastity requires an entire abstinence from familiar intercourse with the other sex; and that of obedience, entire compliance with the rules of the order, and the commands of the superior.

MONBODDO, LORD. See *Burnett, James.*

MONCONTOUR; a village of France, in Vienne, about twenty-five miles N. W. of Poictiers. Henry III., when duke of Anjou, defeated Coligny here in 1569. See *Coligny.*

MONDAY (*moon* and *day;* Saxon *Monandæg;* German *Montag;* Latin *lunæ dies;* all of the same signification); the second day of our week, formerly sacred to the moon. See *Week.*

MONDAY, PLOUGH. See *Plough Monday.*

MONDOVI, a city in the Sardinian territories, capital of the province of the same name, in Coni (*Cuneo*), thirty miles south of Turin; a bishop's see; population, 21,550. It is situated on the top of a steep hill, and surrounded by fortifications. Among the public buildings, the principal is the cathedral. The battle of Mondovi, gained by general Bonaparte in 1796, rendered the French masters of Piedmont.

MONEMBASIA, the Greek name for the place called in the English books *Malvasia.* The population given under *Malvasia* is that of the place before the late desolating war. The present population is but 200.

MONEY; the common medium of exchange among civilized nations. Money must consist of a material, 1. which has a value of its own; 2. which every man is willing to accept in exchange for his property; 3. whose value is readily ascertained. If this material is moulded into a particular form, and stamped with a mark denoting its value, so that it is appropriated expressly to the exchanging of articles having value, it is called *money*, in distinction from other articles which have value, but which are not used as a medium of exchange. The materials of which money is made, as well as the coin, are merchandise, like other articles that are bought and sold. Different nations, in the early periods of their cultivation, have chosen for money different materials, all having more or less of the above-mentioned peculiarities. All nations, advanced in trade and the arts, give preference to metals, especially the precious metals; for, 1. they derive value from the smallness of their quantities, compared with the demand for them in the ornamental and useful arts. 2. They are very little subject to corrosion and destruction by use. 3. They are susceptible of minute division, and may be used in small quantities or masses. 4. They are easily transported, as their transportation to any distance will cost but a small part of their value. 5. The quantity is increased by labour. The advantage of using the precious metals for a universal currency is still greater, when it is not left for every private man to divide the pieces of metal, to weigh them, and fix their fineness, but persons are appointed under the authority of the law, to decide what pieces shall be circulated as money, to stamp them so as to fix their weight and fineness, and to furnish them with the superscription of the authority by which they are authorized. Such pieces are called *coins;* (for the process of coining, see *Coinage*). Instead of money the merchant often receives a promissory note or bill: this substitute is sometimes improperly termed *money.* It is manifest that promissory notes or bills of exchange are of the same value with the real money only while they can be readily exchanged for coin, and that they must lose their value in proportion as the credit of those who issue them, sinks. This is true of all paper money (see *Circulating Medium*), and all metallic money whose current value is higher than its real value, all notes or bonds taken instead of money. That any sort of money may be received for its real value, or that which it represents, and trade be carried on by means of it, it is necessary that its value should be acknowledged wherever it is used. A distinction, however, is made between money which is received in only one trading-place or small circle, issued in time of peculiar necessity, denominated *tokens*, &c., also coins current in only one country, and money which is everywhere acknowledged and received, such as bars of gold and silver, of a certain weight and fineness, also Dutch ducats, Spanish dollars. The exchangeable value of gold and silver, like that of all other commodities, depends, in the first place, on their plenty or scarceness, or, in other words, the quantity supplied in comparison with the quantity wanted, or for which there is a demand; and, in the second place, upon the labour necessary in extracting the ore from the mines, and refining it. As a general rule, it may be assumed that if, taking the aggregate of silver mines, and that of iron mines, the expense, that is, the labour, including the use of machinery, necessary to extract a pound of silver from the ore, and refine it, is twenty times the expense, or labour, of smelting, forging, and refining a pound of iron, silver will be worth twenty times as much as iron. The comparative value of gold and silver will depend upon the same causes as that of either compared with iron, copper, or tin. In Britain, the value of gold, compared to that of silver, is as $15\frac{1}{6}$ to 1; in France, as 15[illegible] to 1; in Geneva, as $15\frac{31}{54}$ to 1; and in the United States of America as $15\frac{11}{27}$ to 1. The comparative value is necessarily very nearly the same all over the world, since each metal costs but a trifle for transportation, and both are articles of value everywhere. The quantities of gold, in its various forms of coin and bullion of all descriptions, including bars, plate, &c., has been estimated to be 10,000,000 of pounds, troy weight.

A scarcity of money can occur only when, 1. the material of which it is manufactured is deficient, or, 2. when those in want of it have nothing to give in exchange to its possessors. In the last place, there is no real deficiency of money, for there are individuals who, by the terms of the supposition, possess the money: there is only a deficient demand for goods on hand, and those only are in want of money who are unable to dispose of these goods. Scarcity of money, therefore, is only a relative expression; i. e. there are certain places or persons without money to obtain certain articles which they desire to possess. All mechanics, artisans, and manufacturers want money enough to purchase the raw materials which they consume, and to pay the wages of their labourers. Merchants need money to pay manufacturers and producers for their goods, and to transport them where they are wanted, and the last consumer needs it to give in exchange for what he eats, drinks, wears, &c., to the dealer of whom he procures the requisite articles. Now, if any one of these classes has not the money required for any of those purposes, there is a scarcity of money for that class of individuals. In these and similar cases, the scarcity of money does not suppose a real scarcity of gold and silver, or a deficiency of coined metals. The scarcity arises from the want of industry, or means, in any class of citizens, to procure the money in circulation, or from their industry being directed to the production of such articles as there is no present demand for among the actual possessors of money; as when, for instance, in grain-growing countries, there is a deficiency of purchasers of the grain produced, there not being consumers enough of the grain, who can obtain or produce desirable articles in exchange for it. In such a case, the producers of grain can obtain money only by exportation of the article to foreign ports. And if it happens that the foreign lands to which it is exported are already provided with grain from some other quarter, it will remain unsold—not because there is no money, but because there is no motive to induce its possessors to part with it for grain. In places where manufactures of any kind prosper, a certain quantity of money is required to provide the materials. This sum is easily ascertained, according to a certain average, and there is no scarcity of money for these purposes, as long as this sum is on hand. But when the manufacture is increased, by the operation of particular circumstances, and the place produces more goods than common upon this account, a scarcity of money may easily occur among those devoted to this branch of business. If now these persons possess goods or credit, they make use of both to obtain the money required from other parts; which will depend, again, upon their being able to pay the expenses of transporting their goods, or to give to the holders of money a higher interest than they can elsewhere obtain. Money, in these cases, becomes of more value in these places than in those where it is not so much in demand; and it follows, from this, that money will leave the places where it is plenty to seek those where, from the want of it, more will be paid for its use; and, in this manner, a scarcity of money will work its own cure.

Money is profitable to any country only by means of its circulation (q. v.); for circulation makes money the continually repeated cause of the production of new portions of property; and, on this account, a small sum of money, in constant circulation, is of far more benefit to a country than the possession of the largest sums which remain locked up, and do not change owners. A great quantity of money, therefore, is of no service to a country, unless there are desirable things in that country, for the purchase of which it is to be paid, and thus transferred from one to another. When, therefore, more money flows into any country than will pay for what the country actually produces, money becomes of less value, and the money price of merchandise greater. In this case, it is better to procure the goods from countries where their money price is less. The money will thus be exported again, and procure a return of cheap goods in its place. But, by this process, the industrious part of the population are injured, and those only receive profit who make these exchanges of money for foreign goods. The labouring classes, therefore, experience a scarcity of money, because the articles which they produce do not command a ready sale. In this manner, all the gold and silver obtained by Spain and Portugal from South America passed into foreign countries in exchange for foreign necessaries. The only true means, then, to remove and to prevent permanently a scarcity of money, is to improve the state of domestic and internal industry; and their opinion is wholly destitute of foundation, who believe that a mere plenty of money is sufficient to develop a healthy state of domestic industry; for the money does not produce the goods, but follows their production. And money will not stay in a country that does not contain goods upon which it may be expended, but it seeks those countries which produce the objects of desire.

The worst of all means of supplying a scarcity of money is the multiplication of those things (as paper of all kinds) by which it is represented, or which are used as substitutes for it; for these circulating media are only worth so much as can be obtained in real value for them, and the scarcity of the precious metals in the country, preventing those who desire it from exchanging their money for them, the value of this paper medium falls at once. Nor does it help the case to base the value of this money upon any thing else than the precious metals; for, if their value is expressed in any article not so easily disposed of as gold or silver, as grain, for instance, these bills for grain are worth no more than the grain itself; and, if grain falls in value, these grain-bills must of necessity sink with them; and, if the grain cannot be used as a means of payment, then they lose their value altogether. A circulating medium fixed upon so insecure a basis can never take the place of real gold and silver. The truth of all these remarks is strikingly illustrated by the history of the continental paper issued by the American congress, during the revolution, and by that of the celebrated French assignats, which, resting upon the credit of a people without money, and without means of getting it, were soon found to be of little worth, or of none at all. Nor is this contradicted by the fact that the paper of the bank of England remained good during the stoppage of specie payments; for the wealth and the productiveness of this nation are so great as to render all transactions safe in any paper authorized by its government; and that wealth and industry combined place it in a situation so far removed from most countries, that it only forms, in this respect, a fair exception to a general law.

No certain estimate can ever be formed of the quantity of money required to conduct the business of any country; this quantity being, in all cases, determined by the value of money itself, the services it has to perform, and the devices used for economising its employment. Generally, however, it is very considerable; and when it consists wholly of gold and silver, it occasions a very heavy expense. The wish to lessen this expense has been one of the chief causes that have led all civilized and commercial countries to fabricate a portion of their money of some less valuable material, such as paper.

MONEY, STANDARD OF. See *Standard.*

MONGE, GASPAR, a celebrated mathematician and natural philosopher, born at Beaune, in 1746, studied in the colleges of the fathers of the oratory at Beaune and Lyons with such success that he became a teacher at the age of sixteen. He was afterwards employed at the military school of Mézières, where he assisted Bossut, the professor of mathematics, and afterwards Nollet, professor of physics, whom he succeeded. In 1780, he removed to Paris, on being admitted into the academy of sciences, and became the coadjutor of Bossut, in a course of lectures on hydrodynamics at the Louvre. He quitted Mézières entirely in 1783, on being appointed examiner of the marine, when he composed a Treatise on Statics, afterwards used for the polytechnic school. In 1789, like other friends of freedom, Monge indulged in expectations of the regeneration of France. Through the influence of Condorcet, he was made minister of the marine, in 1792, and he held, at the same time, the portfolio of minister of war, during the absence of general Servan with the army. He thus became a member of the executive council of government, in which capacity he signed the order for the execution of Louis XVI. Shortly after, he resigned his functions, in consequence of which he was exposed to the persecution of the ruling party of the Jacobins, against which he successfully defended himself. He was then employed, together with other men of science, in improving the manufacture of gunpowder, and otherwise augmenting the military resources of the country. The Normal school was founded, with which Monge became connected; and he then published his *Géométrie descriptive*, one of his principal works. Together with Berthollet and Guyton Morveau, he principally contributed to the establishment of the polytechnic school; after which, in 1796, he was commissioned to go to Italy, and collect the treasures of art and science from the countries conquered by the French; and the labours of Monge and his colleagues gave rise to the splendid assemblage of works of taste and genius, which for a time ornamented the halls of the Louvre. In 1798, he went with Bonaparte to Egypt, where he was again employed in the service of science. On his return to France, he resumed his functions as professor at the polytechnic school, in the success of which he greatly interested himself. The attachment which he manifested to Bonaparte led to his being nominated a member of the senate, on the formation of that body. The emperor bestowed on him the title of *count of Pelusium*, the senatorial lordship of Liege, made him grand cordon of the legion of honour, gave him an estate in Westphalia, and, a little before he set out on his Russian expedition, a present of 200,000 francs. The fall of his benefactor involved him in misfortunes. He was expelled from the institute in 1816, one of his sons-in-law was exiled, and he was deprived of all his employments. His faculties became disordered, and he died July 28, 1818. Besides the works above noticed, Monge published *Description de l'Art de fabriquer les Canons* (4to), and *Application de l'Analyse à la Géométrie des Surfaces* (4to), as well as a multitude of memoirs on mathematical and physical science. His pupil Dupin has published an *Essai historique sur les Services et les Travaux scientifiques de Monge.*

MONGULS; a great nation in the north-east of Asia, which, after having been, at two different times, in the middle ages, distinguished for its conquests, has been sunk, for three centuries past in inactivity, and is now hardly known in Europe, but by name. The Monguls have been frequently confounded with the Tartars dwelling in south-western Asia, with whom, however, they have nothing in common but a nomadic mode of life, and an irregular savage method of waging war, pillage being their sole object. They differ from them essentially, by a dingy complexion, small eyes, and their corporeal structure in general, as well as by their language and manners. The annexed cut represents the dress of the males.

Their early history is obscure. In the thirteenth century, they spread their conquests and devastations from the depths of northern Asia over Russia, and other parts of Europe. They came from the regions which they now, in part, inhabit, Mongolia, north of the great wall of China, between the present Eastern Tartary and Bucharia. For their power and consequence they were indebted to the genius of a single extraordinary individual, Genghis Khan (q. v.), who having been, originally, merely the chief of a single Mongul horde, compelled the other hordes to submit to his power, and then, in 1206, conceived the bold plan of conquering the whole earth. In a short time he subjugated two great Tartar empires in the east and west of Asia, destroyed in six campaigns the mighty monarchy of the sultans of Chowaresmia, who reigned over Turkestan and all Persia as far as India, and during the same period sent part of his subjects, under the command of his eldest son, in 1223, to devastate Russia. After the death of Genghis Khan, in 1227, his sons pursued his conquests, subjugated all China, subverted the caliphate of Bagdad, and made the Seljook sultans of Iconium tributary. In 1237, a Mongul army again invaded Russia, conquered Moscow, and desolated a great portion of the country. Having subjugated Russia, the Monguls entered Poland in 1240, burned Cracow, and advanced in Silesia to Leignitz, where they conquered Henry, duke of Breslau, in a bloody battle, April 9, 1241. But want of provisions soon compelled them to leave the countries which they had laid waste with fire and sword. In Germany, and even France, where the former invasions of the Huns were held in remembrance, the fear of them was so great, that fasts and prayers were appointed to avert their approach. They were prevented from taking advantage of the general consternation to extend their conquests, by the disputes which arose respecting the succession to the throne, after the death of Khan Octai, the immediate successor of Genghis Khan. The empire of the Monguls still held together, and at the end of the thirteenth century was at the summit of its power. At that time, it extended from the Chinese sea and from India, far into the interior of Siberia, and to the frontiers of Poland. The principal seat of the great khan was China; the other countries were governed by subordinate khans, all of whom were descended from Genghis, and were more or less dependent on the great khan. The most powerful of the Monguls were the Kaptshaks, who lived on the Wolga, and were the scourges of Russia, and the Dshagatais, who lived between the river Oxus and Tartary. But this division of the empire among several petty princes was the cause of the gradual decay of the power and consequence of the Monguls in the fourteenth century. In the fifteenth century, various hordes of this nation were subjugated or destroyed by the Russians, whose conquerors they had previously been. In China, the empire of the Monguls had been overturned, in 1368, by a revolution. But, about 1360, there appeared a second formidable warrior of the tribe of the Dshagatai, Timurlenk (Tamerlane, q. v.), called also Timur Beg. He was of obscure descent, but, as the dynasty of the Monguls of Dshagatai had fallen into decline, raised himself by his talents and courage to the sovereignty of the whole nation. In 1369, he chose the city of Samarcand for the seat of his new government. The other Mongul tribes, with Persia, Central Asia, and Hindóstan, were successively subjugated by him. In 1400, he attacked, in Natolia, the sultan Bajazet I., who had been hitherto victorious against the Christians in Europe, and before whom Constantinople trembled. The battle of Ancyra (Anguri), 1402, was decided against Bajazet; he suffered a total defeat, and was even made prisoner by Timur. The story of the severity which the conqueror is said to have used towards his prisoner, is not well substantiated. For a time, the Christian powers were thus freed from a formidable enemy. After Timur had conquered and desolated all Natolia, he died on an expedition to China, March 19, 1405, sixty-nine years of age. After his death, the monarchy of the Monguls was divided into several states. Baber (Babur), a descendant of Timur, founded, in India, in 1519, a powerful monarchy, which existed till the close of the eighteenth century, as the empire of the Great Mogul. See *Hindostan.*

The Mongul tribes now in existence live partly under Russian, partly under Chinese dominion. Those which remain of the tribe of the Kaptshaks live intermingled with the Calmucks, in the government of Irkutsk; their number, with that of the Calmucks, is estimated at 300,000. The rest, which are under Chinese sovereignty, but are governed by four different khans, live in Mongolia, which is bounded by Tungusia, China, Little Tartary, and Siberia. They all profess the religion of Fo (q. v.), lead a nomadic life, but, by means of caravans, carry on some trade with Russia, in woollen and cotton goods of their own manufacture. (See the *Hist. des Monguls depuis Tschinguiz-Khan jusqu'à Timour-Lane* (Paris, 1824), and Isaac James Schmidt's excellent *Forschungen im Gebieteder ältern, religiösen, politischen und literar. Bildunsgesch. der Mongolen und Tibeter* (St Petersburg, 1824). Schmidt's German translation of Ssanang Ssætsæn's History of the Eastern Monguls, accompanied with a commentary, and with the Mongul original, has been printed at Petersburg, at the expense of the emperor. Baber's interesting Memoirs, written by himself, have been translated from the Dshagatai Turkish into English (London, 1826), by Leyden and Erskine with an introduction, very important for the history of the Monguls.

MONITEUR. November 24, 1789, a journal was commenced at Paris, the *Gazette Nationale, ou le Moniteur Universel,* which was intended to give an account of foreign events, but more especially of the doings of the national assembly, and on the 7th Nivose of the year VIII., it was declared an official paper. Since that time it has been the most important, and the only official journal of the French government. Since January 1, 1811, it has dropped the title *Gazette Nationale,* and retained only that of *Moniteur Universel.* The occurrences that took place between 1787 and the opening of the national assembly, have been subsequently added in an introduction published in the year IV. (Paris, 1 vol. fol.) In the year IX. (Paris, 2 vols. folio), appeared the *Révolution Française, ou Analyse complète et impartiale du Moniteur, par Ordre Chronologique*, and in the following year, the *Table Alphabétique du Moniteur* (likewise in 2 vols. folio), but neither of which, unfortunately, comes down farther than the close of the year VII. The *Moniteur* appears every day in a large folio sheet, often accompanied with supplements. It contains, in the two divisions appropriated to foreign and domestic news, not only the official ordinances and documents of the government, appointments, removals from office, promotions, &c., with notices on the arts, literature, and the drama, but also such political information as the government intends shall be regarded in France as official. The *Moniteur* had a great circulation in France and Europe generally, and also in America, during the revolution. Entire sets are rare. The years VII. and VIII. (1798—1800) in particular, of which a smaller impression was made, are often wanting. Among the daily papers of modern times, the *Moniteur* maintains a melancholy celebrity. It has exhibited, in the same nation, the picture of the most unbridled popular rage, and of oppressive monarchical despotism. It is one of the most important collections of public documents for the historian of the great changes in Europe since the beginning of the French revolution.

MONITOR; a genus of large lizards, which have teeth in both jaws, and none on the palate; most of them have the tail compressed laterally: they derive their name from a popular belief that they give warning of the approach of crocodiles, by making a kind of whistling noise. They are found in most parts of the world, and the fossil remains of species much larger than any now existing, have been discovered in various places in Europe.

MONITORIAL INSTRUCTION. See *Mutual Instruction.*

MONK. See *Monastery*, and *Orders, religious.*

MONK, George, duke of Albemarle, an English military officer, distinguished in history for the prominent part he acted in the restoration of Charles II., was the son of Sir Thomas Monk. He was born Dec. 6, 1608. Entering into the army at an early age, he served under Sir Richard Grenville, in an expedition to Spain, and in 1630, went to the Netherlands, where he was promoted to a captaincy. He was engaged in the unfortunate expedition of Charles I. against the Scots in 1639, at which period he was made lieutenant-colonel. On the rebellion taking place in Ireland, he was sent thither, and his services were rewarded with the post of governor of Dublin. Hostilities occurring between the king and the parliament, colonel Monk brought over his regiment to his majesty's assistance. He was appointed major-general in the Irish brigade; and being employed at the siege of Nantwich, was made a prisoner, and committed to custody in the Tower of London. He devoted his leisure to writing, and composed Observations on Military and Political Affairs, published not long after his death. Having been detained about three years in confinement, he accepted a commission from the parliament, on condition of being employed only against the Irish insurgents. He distinguished himself repeatedly in this service; but, having made a treaty with the Catholic chieftain O'Neal, which gave offence to the English parliamentary government, he resigned his command, and returned to his estate. After the entire overthrow of the royal party, Monk was employed with Cromwell in Scotland, and was present at the battle of Dunbar. His coadjutor returning to England, he was intrusted with the chief command. War taking place with the Dutch republic, he engaged in the naval service, and, together with admirals Blake and Dean, commanded in two engagements, in which they triumphed over the enemy, commanded by the famous Van Tromp. On the re-establishment of peace, Monk returned to Scotland, where, at the head of the English army, he maintained the authority of Cromwell in that country. On the decease of the protector, the resignation of power by his son, and the contest of parties which subsequently took place, he availed himself of the commanding situation which he occupied, to crush the republicans, and promote the recall and restoration of the Stuart family to the throne, in the person of Charles II. The dukedom of Albemarle, the order of the garter, and the office of privy-counsellor, rewarded the loyalty of the restorer of Charles II. During the Dutch war, Monk was again employed in the naval service, and in 1666 defeated the Dutch fleet commanded by his former antagonist, Van Tromp, and admiral De Ruyter. He died January 3, 1670, and was buried in Westminster abbey. He was married to a woman in low life, who maintained a complete ascendency over him.

MONKEY (*Simia*, Linn.) The monkey tribe forms by far the largest portion of the great order of *quadrumana*, and, in addition to hands on all the extremities, with long and flexible fingers and opposable thumbs, they generally possess also the following characteristics:—The incisor teeth are four in each jaw, and their molars resemble those of man: these are five in number on each side of each jaw in the monkeys of the old continent, and in one tribe of the new; the remainder of the American species have a sixth. The canines vary in size, from a powerful tusk to a trifling projection beyond their other teeth. The nails of all their fingers, as well as those of the thumbs, are invariably flat and expanded. The head is subject to great variations, in some approaching the human in form, and passing through every intermediate gradation, till it becomes as flat as that of the dog. But of all their organs there is none which exhibits so remarkable a discrepancy as the tail: this is wholly wanting in some; forms a mere rudiment in others; is short and tapering in a third group; moderately long and cylindrical in a fourth; in a fifth, extremely long, and covered with hair; whilst, again, in another group, it is long, denuded of hair beneath and at tip, and prehensile. On these characters naturalists have made several classifications of them, each differing from the other as to the value of certain distinctions. The following is that given by Cuvier, in the last edition of his *Règne Animal*:—

SIMIÆ.

I. Subgenus. Apes proper, or of the ancient continent.

1. Subdivision. Orangs. *Simia*, Erxl. *Pithecus*, Geoff.
2. " Gibbons. *Hilobates*, Ilig.
3. " Guenons. Monkeys. *Cercopithecus*, Erxl.
4. " *Semnopithecus*, F. Cuvier.
5. " Macaques. *Macacus.*
6. " Magots. *Inuus*, F. Cuvier.
7. " *Cynocephalus*, Cuvier.
8. " Mandrils.

II. Subgenus. Apes of the new continent.

1. Division. Sapajoos.

1. Subdivision. *Mycetes*, Ilig. Howling apes.
2. " *Ateles*, Geoff.
3. " *Brachyteles*, Spix.
4. " *Sagothrix*, Geoff. *Gastrimargus*, Spix.
5. " *Cebus*, Geoff.

2. Division. Sakis.

1. Subdivision. *Brachiurus*, Spix.
2. " *Callithrix*, Geoff.
3. " *Nocthora*, F. Cuvier.

But although thus diversified in their forms, they all possess some general characteristics. They are all mischievous, filthy, lascivious, and thievish. They all employ their fore-feet as hands. When injured or offended they use threatening gestures, chatter their teeth; and when pleased, appear to laugh. The dispositions of many of the species are extremely perverse, whilst others are so mild and tractable as to be readily tamed and taught a variety of tricks. They are all fond of hunting for vermin, both in their own fur, and in that of their companions, possess a very delicate sense of feeling, and are able to leap with surprising agility from tree to tree. Most of the species are gregarious, associating in large troops; but each troop is invariably formed of the same species. The monkeys proper are the most lively and active, their prehensile tail answering the purpose of an additional hand. In many parts of India, monkeys were made objects of worship, and magnificent temples erected to their honour. When the Portuguese plundered the island of Ceylon, they found, in one of the temples dedicated to these animals, a small golden casket, containing the tooth of a monkey. This was held in such estimation by the natives, that they offered 700,000 ducats to redeem it. The viceroy, however, ordered it to be burned. Some years afterwards, however, a Portuguese having obtained a similar tooth, pretended that he had recovered the old one, which so rejoiced the priests, that they purchased it from him for a sum exceeding 50,000 dollars. See *Ape*, *Baboon*, *Orang Otang*.

MONMOUTH, James, duke of, the son of Lucy Walters, one of the mistresses of Charles II., as is generally reported by that prince, although some circumstances render it highly probable that one of her former lovers was the father of the duke. He was born at Rotterdam, in 1649, and was always acknowledged by Charles, who had him carefully educated in France, as his natural son. After the restoration, he was sent home, and created earl of Orkney and duke of Monmouth, and received the garter. "He possessed," says Hume, "all the qualities which could engage the affections of the populace—a distinguished valour, an affable address, a thoughtless generosity, a graceful person. He rose still higher in the public favour by reason of the universal hatred to which the duke (of York), on account of his religion, was exposed. Monmouth's capacity was mean; his temper pliant; so that, notwithstanding his great popularity, he had never been dangerous, had he not implicitly resigned himself to the guidance of Shaftesbury, a man of such a restless temper, such subtle wit, and such abandoned principles. That daring politician had flattered Monmouth with the hopes of succeeding to the crown." This character explains his whole life. In 1679, he received the command against the Scotch covenanters, whom he defeated at the battle of Bothwell bridge, but was deprived of his command, and sent out of the kingdom, the same year, to quiet the fears of the duke of York. He soon after returned, and engaged in several conspiracies with Sidney, Shaftesbury, and other leaders, some of whom were desirous of establishing a republic; others merely wished to exclude the duke of York, while Monmouth entertained secret hopes of acquiring the crown. One of these plots, some of the parties to which were also concerned in the rye house plot, being discovered in 1683, Monmouth concealed himself for some time, but was afterwards pardoned on expressing his penitence. No sooner had he obtained his pardon than he disavowed having made any concessions to the court, and was, in consequence, ordered by Charles to depart from the kingdom. On the accession of James II., Monmouth, finding himself pursued by the king's severity, was induced, contrary to his judgment and inclination, by the impatience of some of his partisans, to attempt an invasion of England. He arrived at Lime with hardly a hundred followers (June, 1685); but his numbers were soon increased, and he assumed the title of king, and asserted the legitimacy of his birth. His forces were defeated at Sedgemore Bridgewater, and the duke himself was made prisoner, having been found in the disguise of a peasant, lying at the bottom of a ditch, overcome with hunger, fatigue, and anxiety. He refused to betray his accomplices, and conducted himself with much firmness on the scaffold, where his head was severed from his body, after four unsuccessful blows. The people, of whom he was still the favourite, believed that the person executed was not Monmouth, but one of his friends, who resembled him so nearly as to pass himself off for the duke, and suffer in his stead. It was probably this belief which has led some to conjecture that the famous Iron Mask was the duke of Monmouth.

MONMOUTHSHIRE; a county of England, originally included in Wales, but annexed to England by Henry VIII. It is bounded on the north by the counties of Brecknock and Hereford; on the east by Gloucestershire; on the south by the Bristol channel; and on the west by the counties of Glamorgan and Brecknock. Its extreme length, from north to south, is thirty-three miles, and its breadth twenty-six miles; its superficial contents being 316,800 acres. This county displays abundant traces of its occupation by the Romans, in the vestiges of their military roads, camps, and villas, with the tessellated pavements, coins, urns, and inscribed stones, which have been discovered at different periods. It exhibits still more permanent indications of the ascendency of its British population, in the names of the towns and villages, almost all of which are derived from the Cimbro-Celtic dialects; and Welsh is yet the general language of the lower classes of the inhabitants and the country people. The scenery in most parts is beautiful and picturesque, presenting a luxuriant diversity of hill and dale. The western portion is mountainous, and the eastern well furnished with wood; and between both are tracts of fine arable land, rich and fertile meadows and pastures, watered by numerous streams, and interspersed with towns, villages, country seats, and dilapidated remains of monastic or baronial establishments.

The principal rivers are the Wye, the Munnow, or Mynnow, the Usk, the Ebwy, and the Rumney. The Wye enters this county a little to the north-east of Monmouth, where it joins the Munnow, which rises in Brecknockshire, and then forms the boundary between the counties of Hereford and Monmouth: the united stream then passes to the border, and flows southward to its confluence with the Severn, below Chepstow. The Usk has its origin in Brecknockshire, and entering this county eastward of Crickhowell, takes a tortuous course towards its termination in the Bristol Channel, below Newport. The Ebwy also rises in Brecknockshire, and flowing westward of the Beacon Mountain, and through the romantic valley of Ebwy, falls into the estuary of the Usk. The Rumney, which divides this county from Glamorganshire, enters the Bristol Channel below Rumney Bridge. The long narrow valleys in different parts of Monmouthshire are watered by numerous streams of minor importance, several of which fall into the Bristol Channel. All the rivers abound with fish; and on the Wye and Usk are salmon-fisheries. The county town, Monmouth, situated at the conflux of the Munnow and the Wye, twenty-five miles west of Gloucester, is the only borough; and the market-towns are Abergavenny, Caerleon, Chepstow, Newport, Pontypool, and Usk. Population, in 1831, 98,130.

MONNIER, Pierre Charles Le; astronomer,

member of the academies at Paris, London, and Berlin, was born at Paris in 1715, and early displayed a decided inclination for astronomical studies. In his sixteenth year, he made observations on Saturn, and in his twentieth year communicated to the academy of sciences in Paris his *Nouvelle Figure de la Lune, avec la Description des Taches.* The academy admitted him into their number, and, in 1735, he went with Maupertuis to Lapland. In 1748, Monnier observed the annular eclipse of the sun, in Scotland, and was the first who measured the moon's diameter on the sun's disk. In 1750, Louis XV. employed him to run a meridian line through the castle of Bellevue. Lalande, with whom he was afterwards on unfriendly terms, was his pupil, and always spoke of him with the highest esteem. Lemonnier was of an impetuous and capricious temper; and after his death several valuable works were found among his papers, which, in spite of all entreaties, he had obstinately refused to publish, and which he threatened to burn. Among them was a catalogue of fixed stars, the plan of which he had exhibited to the academy in 1741. He was indefatigable in his labours, and his whole life was devoted to science, which is indebted to him for many improvements. He was the first to determine the difference of refraction in summer and winter. He corrected the tables of the sun, and the catalogues of the stars, fixed with greater accuracy the inclination of the ecliptic, and ascertained the elevation of the pole at Paris. He introduced into France the transit-instrument constructed by Graham, and pointed out the irregularities in the motion of Saturn, produced by the attraction of Jupiter. He died in 1799. Of his numerous works, his *Histoire Céleste* and his *Théorie des Comètes* deserve to be particularly mentioned.

MONOCHORD (from the Greek); an ancient instrument, or machine, so called, because it is furnished with only one string. Its use is to measure and adjust the ratios of the intervals, which it effects by the means of movable bridges, calculated to divide the chord at the pleasure of the speculatist. The *monochord* appears to have been in constant use with the ancients, as the only means of forming the ear to the accurate perception, and the voice to the true intonation, of those minute and difficult intervals which were then practised in melody.

MONOCHROME (Gr. *μονος*, single, and *χρωμα*, colour), in ancient painting; a painting with one single colour. This description of art, is very ancient, and was known to the Etruscans. The first specimens of the art of painting were of one tint only, which was most commonly red, made either with cinnabar or minium. Instead of red, white paint was sometimes used. Quintilian says of Polygnotus, and Pliny of Zeuxis, that their performances of this kind were of the latter description. The antique tombs of the Tarquins, in the neighbourhood of Corneto, offer several figures painted in white upon a dark ground. The first four plates in the first volume of the paintings of Herculaneum contain several monochromes upon marble. The most numerous monuments existing of this kind of painting are on terra cotta.

MONOCRAT has been used by a few writers to designate with one word an absolute monarch. They object to *autocrat*, as not sufficiently precise, since there might be also an autocratic body, that is, several or many persons who govern without any dependence on those who are governed.

MONODRAMA; a drama in which only one person plays.

MONOGRAM (*μονος*, single, or only, and *γραμμα*), in archæology; a character or cipher composed of one, two, or more letters interwoven, being a sort of abbreviation of a name, anciently used as a seal, badge, arms, &c. They were used on coins, standards, walls and tapestry, seals and documents; first on coins, latest on documents, in which they were employed not only by princes and ecclesiastical dignities, but also by magistrates and notaries. Their use particularly as arms is ancient, as appears from Plutarch, and from some Greek medals of the time of Philip of Macedon, and Alexander, his son. The Roman *labarum* bore the monogram of Jesus Christ, which consisted of two letters, a P placed perpendicularly through the middle of an X, as we find it on many medals of the age of Constantine, these being the two first letters of the word ΧΡΙΣΤΟΣ. Under the Eastern empire, it is usual to find MIK, which form the monogram of Mary, Jesus, Constantine. The use of monograms was exceedingly common upon Greek coins; and many antiquarians have bestowed much time and attention in the effort to decipher them—a useless labour, since a great number of these monograms were, without doubt, of a conventional nature, and understood only by a few, even in the times at which the coins were current. After the time of Charlemagne, who made much use of them, and improved their form, monograms became very common in all the countries which had belonged to the Frankish empire, but after the twelfth century, gradually went out of use. The use of them remained longest in Germany, where it was formally abolished by the diet of Worms, in 1495. The knowledge of monograms of this public kind is of great importance for the illustration of the monuments and documents of the middle ages, and therefore forms a particular branch of diplomatics. The term was subsequently applied to all sorts of ciphers and signs, with which artists, particularly painters and engravers, were accustomed to designate their works. These have often been counterfeited. The ancients called every outline, every simple sketch, a *monogram.* Montfaucon, in his *Paléographie Grecque*, has given a very extensive catalogue of monograms taken from medals of various kinds. John Fr. Christ's collection of figures of monograms, accompanied by explanations,—*Anzeige und Auslegung der Monogrammatum* (Leipsic, 1747),—is valuable; also Brouillot's celebrated *Dict. des Monogrammes*, completed and corrected, in his *Table générale des Monogr.*, *Chiffres*, &c. (Munich, 1820).

MONOGRAPH (*μονος*, only, single, *γραφειν*); a treatise on a single subject in literature or science; thus we say, a *monograph* on violets, a *monograph* on Egyptian mummies. The advantage of a treatise of this nature is, that it allows more minuteness of detail in reference to all the properties and relations of the subject of the monograph. Papers in the memoirs or transactions of literary and scientific societies, and in periodical journals, are often monographs, and have contributed much to the progress of modern science.

MONOLITHIC (from *μονος*, single, and *λιθος*, stone); consisting of a single stone. According to Herodotus, there was a monolithic sanctuary attached to a temple at Sais, dedicated to Minerva, twenty-one cubits long, fourteen wide, and eight high, which was brought from Elephantine. The carriage of it employed 2000 men three years. Some striking specimens of monolithic temples are still found in Egypt, and, like the monolithic obelisks, bear testimony to the wonderful application of mechanical power among the ancient Egyptians. See *Obelisks.*

MONOLOGUE (*μονος*, single, *λογος*, discourse); in distinction from *dialogue* (q. v.), in the drama; the same as *soliloquy.* See *Soliloquy.*

MONOMANIA (from *μονος* and *μανια*); the name given, by some physicians, to that form of mania, in which the mind of the patient is absorbed by one idea; for instance, if the patient believes that he is God, or Christ, an emperor, &c. See *Insanity*.

MONONGAHELA; a river which rises from the Laurel mountains, in Virginia, runs north into Pennsylvania, and unites with the Alleghany, at Pittsburg, to form the Ohio. It is navigable for batteaux and barges thirty-two miles, to Brownsville, and still further for lighter boats. Its length is about 300 miles.

MONOPHYSITES; the members of the party who, according to the language adopted in the fifth century, maintain that there is but one nature in Christ, that is, that the divine and human natures were so united as to form but one *nature*, yet without any change, confusion, or mixture of the two natures. They were condemned as heretics, at the council of Chalcedon, in 451, which maintained that in Christ two distinct natures were united in one *person*, and that without any change, mixture, or confusion. This distinction without a difference gave rise to a violent dispute. The Asiatic and Egyptian clergy were inclined to the Monophysites, and were unanimous in maintaining the unity of nature as well as of person in Jesus, while the Western contended for the decree of the council. The edict called *Henoticon*, issued by the emperor Zeno, in 482, was not able to quiet the combatants, and, after long and often bloody contests, the orthodox church, by its sentences of excommunication, occasioned a formal secession on the part of the Monophysites. This separation took place in the first half of the sixth century, when the protection which the Monophysites had hitherto received at times from the court at Constantinople, necessarily ceased from the close union of the emperor Justinian with the Roman church. Neither did they remain united among themselves. In 483, the Acephali (q. v.) had already seceded, and formed the real strength of Monophysitism. In 519, new controversies arose among them respecting the question whether the body of Christ is corruptible or not. The Severites, adherents of a deposed patriarch of Antioch, Severus, who belonged to the Acephali, answered in the affirmative; the Julianists, or Gajanites, adherents of the bishops Julianus, or Gajanus, in the negative. The former were, therefore, called *Phthartolatrians (Corrupticolæ*, servants of corruptibility); the latter, *Aphthartodocetæ* (teachers of incorruptibility), or *Phantasiasts*, who again divided respecting the question whether the body of Christ was created, and formed the parties of *Actistetæ*, those who held it increate, and the *Ctistolatrians*, who believed it created. The Severites, also called, from one of their bishops, *Theodosians*, acquired the superiority, and pronounced excommunications against the *Agnoëtæ*, who also arose among them (so called, because they denied the omniscience of Christ as a man). About 560, a Monophysite, Askusnages, and after him Philoponus, the greatest Christian philosopher of that century, conceived the idea of styling the three persons of the Deity three Gods. These tritheists and their adherents, even in the eyes of the Monophysites, were the rankest heretics, and were the occasion of many Monophysites turning Catholics. In Egypt, Syria, and Mesopotamia, the Monophysite congregations, however, remained the strongest, had patriarchs at Alexandria and Antioch, existing, without interruption, by the side of the imperial orthodox patriarchs; and, after the Syrian, Jacob Baradæus, who died 588, had established their religious constitution, formed the independent churches of the Jacobites and Armenians which separated from the Greeks as well as the Romans, and have, for that reason, been able to maintain themselves since the seventh century, even under the dominion of the Mohammedans. Excepting their peculiar doctrine of one nature in Christ, they coincide, in the main points of belief, with the Greek church; their worship also resembles the Greek, rather than the Roman, but has, from their national character and their superstition, received variations, which are most striking in the religious constitution of the Egyptian Jacobites. These *Copts* are in communion with the Syrian Jacobites, but have their own patriarch at Cairo, the patriarch of Alexandria, who has ten bishoprics under him. The Bible and liturgical books they possess in the old Coptic language, which is the same as the Egyptian current under the Ptolemies, at the time of the dominion of the Greeks, and has, therefore, some similarity with the Greek, but is now a dead language. They baptize their children always in the church, and never till they are forty days old, and frequently not till they are seven years of age; but immediately after baptism, they receive the wine of the eucharist. The Lord's supper they celebrate only in the great feasts, use, in the celebration, leavened bread, which is broken, and taste the wine with spoons. According to a custom that had its origin in times of persecution, they attend divine worship in the night, between Saturday and Sunday. It consists merely of service at the altar, of singing, prayer, and reading by the priests, who are, moreover, extremely ignorant, and cannot preach. The patriarch preaches but once a year. Relics, poorly executed images in their churches, the worship of saints, &c., they have in common with the Greeks. Circumcision is customary only with the Copts in Upper Egypt. In their thinly-peopled convents, monks reside with women and children. A fourth Monophysite church is the Abyssinian, which receives its spiritual head from the Copts.

Connected with the Monophysite controversy was the question started in the beginning of the seventh century, whether, in Christ, the united divine and human nature had but one, or two wills. The decision of the Trullan council, at Constantinople, in 680, that there were two wills in Christ, because he had two natures, made the Monothelites (advocates of the doctrine of one will) heretics, but could not prevent the formation, from their remains, of the sect of the Maronites (q. v.).

MONOPOLY is an exclusive right, secured to one or more persons, to carry on some branch of trade or manufacture, in contradistinction to a freedom of trade or manufacture enjoyed by all the world, or by all the subjects of a particular country. The most frequent monopolies, formerly granted, were the right of trading to certain foreign countries, the right of importing or exporting certain articles, and that of exercising particular arts or trades. Such exclusive rights were very common in Britain previously to the accession of the House of Stuart, and were carried to an oppressive and injurious extent during the reign of queen Elizabeth. The grievance at length became so insupportable, that, notwithstanding the opposition of government, which looked upon the power of granting monopolies as a very valuable part of the prerogative, they were abolished by an act of 1624, the 21 James I. c. 3. This act secured the freedom of industry in Great Britain; and has done more, perhaps, to excite a spirit of invention and industry, and to accelerate the progress of wealth, than any other in the statute book. A few monopolies, however, on a large scale still exist. There is one species of monopoly sanctioned by the laws of all countries that have made any advances in the arts, namely, the exclusive right of an invention or improvement for a limited number of years. The exclusive right of an author to the publication of his own work, is hardly a monopoly, but rather a right of property, resting upon the same principle as the right to lands or chattels. The law, therefore, by giving an author the exclusive right to the publication of his own work, for a limited number of years, makes no grant; it is only allowing him what is his own, for a limited time. But the exclusive right to the use of an invention or improvement, is a monopoly, since it deprives others, for that period, of the chance of the advantage of making the same improvement, discovery, or invention themselves. It is taking away a right which they before had. The reason for this is, the encouragement of inventions and improvements, in the policy of which all the world concur. This is the only kind of monopoly generally acknowledged to be useful and expedient.

MONOPTERAL TEMPLES. See *Architecture*.

MONOTHEISM; the belief in, and worship of a single God, opposed to a plurality of gods (polytheism). The most ancient written records (the Bible), and the traditions of the most ancient nations, give us cause to regard this religion (in an imperfect state indeed) as the oldest and original religion. The Mosaic annals speak of God as the Creator of heaven and earth; and the ancient doctrines of the Bramins speak of a single divine nature holding pre-eminence over the three other principal divinities, which are to be regarded, as it were, as the three chief energies of a supreme God, viz. of the Parabrama, who is fully and clearly set forth, with all the attributes of divinity. The Chaldeans, also, besides the light which they opposed to darkness, believed in a higher increate light, which is eternal, almighty, wise, and good, and from which first proceeded the corporeal light. The Persians placed above their Ormuzd and Ahriman their Zeruanon Akherme, and the eternal word. Even the Egyptians had, in their Eikton, a Supreme Being, at least for their secret religion. All the different mythologies have, among the host of gods with which they people heaven and earth, some supreme God, more or less defined, but, in every case, distinguished above the others. And in every instance we see, in these mythologies, the gods gradually multiplied, as man departed, farther and farther, from the simple and original revelation, till lost in the multitude of deified personifications which he had himself created; but even in the case of the most refined polytheism, there always remains an idea of something more powerful, to which even the gods are subject, as the Fate of the ancients. The altar at Athens, "to the unknown God," mentioned in the Acts of the Apostles, is also a proof of the prevalence of the same feeling. Reflecting minds, too, were always found, who deviated from the national polytheism, as the heathen philosophers, Parmenides, Socrates, Plato, &c., and many later Platonists, the Egyptian philosopher Psammon, who, according to Plutarch (Life of Alexander), inculcated the doctrine that God is the general Father of all men, choosing the best of them for his children. The history of the Hebrews affords the most striking instance of the preservation of monotheism amid the corruptions of paganism. Notwithstanding the errors into which they were frequently led by the example of the nations around them, they still preserved the idea of one God, the Creator of heaven and earth, till, from their view of Jehovah, whom they regarded and adored, for the most part, only as the original God of the chosen people, was unfolded the purer and more comprehensive monotheism of Christianity.

MONOTHELITE. See *Maronites*.

MONROE, James, one of the presidents of the United States of America, was born April 28, 1758, in Westmoreland county, Virginia, on the Potomac, on land of which, a century and a half before, his ancestor, who first migrated to this country, was the original grantee. He was educated at William and Mary college, and, in 1776, entered the revolutionary army as a cadet. He was soon after appointed a lieutenant, and, in the summer of that year, marched to New York, and joined the army under the command of general Washington. He was engaged in the battle of Harlem Heights, in that of White Plains, in the retreat through the Jerseys, and in the attack on Trenton. In the last, he was in the van-guard, and received a ball through his left shoulder. For his conduct in this action, he was promoted to a captaincy. General Wilkinson, in his Memoirs, bears strong testimony to the gallantry and zeal of Mr Monroe, in the New Jersey campaign. He was soon after appointed aid to lord Sterling, and served in that capacity during the campaigns of 1777 and 1778, and was engaged in the actions of Brandywine, Germantown, and Monmouth. He distinguished himself in these actions. By entering the family of lord Sterling, he lost his rank in the line, which he was anxious to regain; but, as this could not be regularly done, Washington recommended him to the legislature of Virginia, who authorized the raising of a regiment, and gave him the command. In the exhausted state of Virginia, colonel Monroe failed to raise his regiment, and therefore resumed the study of the law, under the direction of Thomas Jefferson, then governor of Virginia. He was active as a volunteer in the militia, in the subsequent invasions of Virginia, and, in 1780, visited the southern army, under De Kalb, as a military commissioner, at the request of governor Jefferson. In 1782, he was elected a member of the Virginia assembly, and, the same year, by that body, a member of the executive council, and, in 1783, at the age of twenty-four, a member of the old congress, in which he served three years. He was always at his post, engaged in the most arduous duties. He introduced a resolution to vest in congress the power to regulate the trade with all the states, and other important resolutions. He was appointed a commissioner to settle the controversy between New York and Massachusetts. In 1787, he was again returned to the assembly of Virginia, and, in 1788, was a member of the convention of that state, to decide on the present constitution of the United States. In 1790, he was elected a member of the senate of the United States, in which body he served until 1794. In May, 1794, he was appointed minister plenipotentiary to France. Mr Monroe was recalled from this mission in 1796, by president Washington, with an implied censure. In 1799, on the nomination of Mr Madison, he was appointed governor of Virginia, in which situation he served the constitutional term of three years. In 1803, he was appointed minister extraordinary to France, to act in conjunction with Mr Livingston, the minister resident there. This mission was of the greatest consequence to the United States, as it terminated in the acquisition of Louisiana. In the same year, he was appointed minister to London, and the next year to Spain. In 1806, in conjunction with the late William Pinkney, he was appointed minister to London, where he pursued the negotiations with the Fox ministry. Mr Monroe, having been prominently brought forward as a candidate for the presidency, as successor to Mr Jefferson, had an option given him to remain at the court of London, or return. He returned, but soon after withdrew from the canvass. In 1810, he was again elected a member of the assembly of Virginia, and, in a few weeks after the meeting of that body, governor of that state. Nov. 26, 1811, he was appointed secretary of state. The war department being in a very embarrassed state, on the departure of its head, general Armstrong, Mr Monroe undertook it, and made extraordinary and very useful exertions to help the war on the lakes.

and the defence of New Orleans. After he had reduced to order the war department, he resumed the duties of the department of state, which he continued to exercise until, in 1817, he was chosen by the people of the United States the successor of James Madison. In 1821, he was re-elected by a vote unanimous with a single exception, one vote in New Hampshire having been given to John Q. Adams. He was wise and fortunate in the selection of his ministers and measures. He went further than either of his two immediate predecessors, in maintaining the necessity of an efficient general government, and in strengthening every arm of the national defence. He encouraged the army, increased the navy, and caused those foreign naval expeditions to be sent out to the West Indies, the Mediterranean, the coast of Africa, and the shores of South America, which have given instruction to the officers of the United States, augmented the number of their seamen, protected the national commerce, and caused the country to be universally respected by distant nations. He ordered the principal head lands and exposed points along the borders and the sea-coast to be accurately surveyed, plans of fortifications drawn, and the reports made up, with a view to the ultimate complete defence of the frontiers of the United States, both on the land and sea side. He directed inquiries, surveys, and plans, as to the most suitable sites for the northern and southern naval depots for the repair and accommodation of the fleets during times of war and peace. The cession of Florida by Spain to the United States was effected during his administration. It was during his administration that the emancipated Spanish and Portuguese colonies were formally recognised by the American government. He assumed high constitutional grounds in favour of internal improvement and the bank of the United States. He was mainly instrumental in promoting the pension law for the relief of indigent revolutionary soldiers. During his administration, the illustrious Lafayette was invited to visit these shores as the guest of the nation. He took the most energetic measures in favour of the abolition of the slave trade, and continued to encourage the establishment of the principles of commerce with all nations, upon the basis of free and equal reciprocity. It is a high compliment to the firmness, judgment, and sagacity of Mr Monroe, that he proclaimed to the world the determination of the United States not to suffer any European power to interfere with the internal concerns of the independent South American governments. The well-timed expression of this sentiment put an end to all rumours of any armed intervention in the affairs of Spanish America. Colonel Monroe retired from the office of president at the end of his second term. In the late stages of his life, he was associated with the ex-presidents Jefferson and Madison, in founding and regulating the university of Virginia. Subsequently, he was chosen a member of the convention for amending the constitution of his native state, and presided over the deliberations of that assembly. He did not disdain to act as justice of the peace in the county of London, in which he resided. Mr Monroe died at New York, on the 4th day of July, 1831, the anniversary of American independence, like the ex-presidents Adams and Jefferson. Colonel Monroe's biography is intimately and honourably connected with the civil and military history of the United States. We have merely indicated the principal stations which he held, and the nature of the services which he performed. He was one of the leaders of the democratic or Jefferson party, and involved in most of the party questions and occurrences by which the country was divided and agitated. He possessed a very energetic, persevering spirit, a vigorous mind, and extraordinary powers of application. In his unlimited devotion to the public business, he neglected his private affairs. He retired from office extremely deep in debt—a situation from which he was relieved, though when almost too late, by liberal appropriations of congress to satisfy the large claims which he preferred on the government for moneys disbursed and debts incurred on its account.

MONS (Latin for *mountain*); found in a great number of geographical names, particularly in languages derived from the Latin, as *Montigny* (inflamed mountain), *Piedmont* (foot of the mountain), *Montpellier* (Mons Puellarum), *Montmirail* (admirable mountain), *Montmartre* (mountain of Mars or of the martyrs), *Montreal* (royal mount), *Vermont* (green mountain), &c.

MONS (*Berghen*); a city lately belonging to the kingdom of the Netherlands, at present in the kingdom of Belgium, capital of the province of Hainaut, situated on a steep hill, on the Trouille. Since 1818, its fortifications have been much extended and strengthened, and it now forms one of the strongest frontier fortresses of Belgium. The country around can be easily laid under water. Population, 20,000. Its manufactures have been considerable, consisting of woollen, linen, and cotton goods, oil, soap, pottery; and it has carried on an extensive trade in coals, obtained in the neighbourhood, hops, grain, cattle, horses, mill-stones, marble. Mons is an old city, and has belonged by turns to Spain, Austria, and France. See *Netherlands.*

MONSEIGNEUR (French, *my lord*); a title of dignity in France; the dauphin was formerly styled *monseigneur*, without any addition. Princes, archbishops, bishops, cardinals, marshals of France, presidents of parliament, &c., were addressed by this title. The plural is *messeigneurs*. The Italian *monsignore* is used in a similar manner.

MONSIEUR (in French), used simply, without any addition, formerly designated the king's eldest brother. In common use, it answers both to the English *Sir* and *Mr*, and is also used before titles. In writing, it is expressed by the abreviation *M.* The plural is *messieurs*. *Monsieur* is sometimes used by English writers as a term of contempt for a Frenchman.

MONSIGNY, Pierre Alexandre, born 1729, in Artois, a popular musical composer, who is considered as the creator of the French comic opera. While young, his talent for music was suddenly awakened by his witnessing the performance of Pergolesi's *Serva Padrona*, and he devoted himself entirely to the study. He learned composition under Giannotti, who dismissed him in five months, as a pupil who knew all that he could teach. But Giannotti was astonished to find that his pupil had already composed an opera, *Les Aveux indiscrets.*, which he brought out, after having recast it, three years afterwards (1759). Encouraged by its success, he produced, in 1760, *Le Cadi dupé* and *Le Maître en Droit.* The opera *On ne s'Avise jamais de tout*, brought forward in 1761, completed the musical revolution at the *théâtre de la Foire*, which then took the name of the *Italian opera*. *Le Roi et le Fermier; Rose et Colas; Aline, Reine de Golconde; L'Isle sonnante; Le Deserteur*, &c., were received with great applause. On the death of Grétry, Monsigny succeeded him in the institute, and on the death of Piccini, in 1800, he was appointed director of the *conservatorie*, at Paris. He died in 1817.

MONSOONS (from the Malay *mussin*, season); periodical trade-winds, which blow six months in one direction, and the rest of the year in an opposite one. They prevail in the Indian ocean, north of the 10th degree of south latitude. From April to October, a violent south-west wind blows, accompanied with rain, and from October to April a gentle, dry, north-east breeze prevails. The change of the winds, or the *breaking up* of the monsoons, as it is called, is accompanied by storms and hurricanes. These periodical currents of winds do not reach very high, as their progress is arrested by mountains of a moderate height. See *Winds*.

MONSTERS; in physiology, creatures whose formation deviates in some remarkable way from the usual formation of their kind. The deviation consists sometimes in an unusual number of one or several organs; sometimes, on the contrary, in a deficiency of parts; sometimes in a malformation of the whole or some portion of the system, and sometimes in the presence of organs or parts not ordinarily belonging to the sex or species. In most cases, these unusual formations are not incompatible with the regular performance of the natural functions, although they sometimes impede them, and, in some cases, are entirely inconsistent with the continuance of the vital action. It is not surprising that we should be ignorant of the manner in which monsters, or irregular births, are generated or produced; though it is probable that the laws by which these are governed are as regular, both as to cause and effect, as in common or natural productions. Formerly, it was a general opinion, that monsters were not primordial or aboriginal, but that they were caused subsequently by the power of the imagination of the mother, transferring the imperfection of some external object, or the mark of something for which she longed, and with which she was not indulged, to the child of which she was pregnant, or by some accident which happened to her during her pregnancy. But this has been disproved by common observation, and by philosophy, not, perhaps, by positive proofs, but by many strong negative facts; as the improbability of any child being born perfect, had such a power existed; the freedom of children from any blemish, though their mothers had been in situations most exposed to objects likely to produce them; the ignorance of the mother of any thing being wrong in the child, till, from information of the fact, she begins to recollect every accident which happened during her pregnancy, and assigns the worst or the most plausible as the cause; the organization and colour of these adventitious substances; the frequent occurrence of monsters in the brute creation, in which the power of the imagination cannot be great; and the analogous appearances in the vegetable system. Judging, however, from appearances, accidents may perhaps be allowed to have considerable influence in the production of monsters of some kinds, either by actual injury upon parts, or by suppressing or deranging the principle of growth, because, when an arm, for instance, is wanting, the rudiments of the deficient parts may generally be discovered.

MONSTRELET, Enguerrand de, a chronicler of the fifteenth century, born at Cambray, of which he became governor, was the author of a history in French, of his own times. The history extends from 1400 to 1467; but the last fifteen years were furnished by another hand. It contains a narrative of the contentions of the houses of Orleans and Burgundy, the capture of Normandy and Paris by the English, with their expulsion, &c. Monstrelet died in 1453.

MONT BLANC (*white mountain*); the loftiest mountain of Europe one of the summits of the Pennine Alps, on the borders of Savoy and Aosta, between the valleys of Chamouni and Entreves; lat. 45° 50′ N.; lon. 6° 52′ E. The following measurements of its elevation above the surface of the Mediterranean sea are deemed the most accurate: by M. Deluc, 15,302 feet; M. Pictet, 15,520; Sir George Shuckburgh, 15,662; M. Saussure, 15,670; M. Tralles, 15,780. Its elevation above the valley of Chamouni is 12,160 feet. It is discernible from Dijon and Langres, 140 miles distant. It received its name from the immense mantle of snow with which its summit and sides are covered, and which is estimated to extend not less than 12,000 feet, without the least appearance of rock to interrupt its glaring whiteness. An ascent to the summit was first made, in 1786, by doctor Pacard, of Chamouni, and his guide, James Balma. In August, 1787, Saussure ascended it with eighteen guides, and remained on the summit five hours. The pulse was found to beat more rapidly, and the party complained of exhaustion, thirst, and want of appetite. The colour of the sky was very deep blue, bordering on black, and in the shade the stars were visible. Up to 1828, fourteen ascents had been made. In 1818, Messrs Howard and Van Renssalaer from New York, in 1825, doctor Clark and captain Sherwill, ascended it. See Sherwill's *Visit to the Summit of Mont Blanc* (London, 1827.) In 1827, two English gentlemen, who made the attempt, were obliged, by a new cleft in the ice, to take a new course, which has proved to be less toilsome and hazardous than the former. Eighteen glaciers lie around, whose various and fantastic forms increase the magical effect of the wonderful spectacle from the summit, from which the view extends nearly 150 miles in almost every direction. The highest summit is a small ridge, about six feet wide, precipitous on the north side, and called in Savoy, the *dromedary's back*. It is covered with a solid body of snow. See *Alps*, *Glaciers*, *Andes*, *Himalaya*, and *Mountains*.

MONT D'OR; a mountain of France, in Puy-de-Dome, about 6130 feet above the level of the sea, abounding in curious plants and mineral springs.

MONT PERDU; summit of the Pyrenees, on the frontier line between France and Spain; about 100 miles east of the bay of Biscay, and further west from the Mediterranean. It has a double summit, one computed at 10,700 feet, or, by another statement, 11,265 feet high; the other at 10,400. The line of perpetual congelation here is about 7500 feet in height.

MONTAGU, Charles, earl of Halifax; an English statesman and poet, born at Horton, in Northamptonshire, in 1661. He was descended from the family of the Montagus, earls of Manchester, and was educated at Westminster school, and Trinity college, Cambridge. From the university he went to London, where he attracted notice by his verses on the death of Charles II.; and, in 1687, he wrote, in conjunction with Prior, the City Mouse and Country Mouse—a travesty on Dryden's Hind and Panther. In the reign of William III. he obtained the place of clerk of the privy council, and became a member of the house of commons. In 1694, he was made chancellor of the exchequer, and subsequently first lord of the treasury. His administration was distinguished by the adoption of the funding system, and the establishment of the bank of England. In 1698, Montagu was a member of the council of regency during the absence of the king, and, in 1700, was raised to the peerage. In the reign of Anne, when tory influence prevailed, he was twice impeached before the house of lords; but the proceedings against him fell to the ground. George I. created him earl, and bestowed on him the order of the garter; but Halifax, being disappointed in his expectation of obtaining the office of lord treasurer, joined the opposition. His death took place May

19, 1715. The poems and speeches of lord Halifax were published, with biographical memoirs, in 1715 (8vo); and the former were included in the edition of English Poets, by doctor Johnson. He aspired to the character of the Mæcenas of his age, and his patronage of Addison is creditable to his discrimination, though little can be said in praise of his munificence.

MONTAGU, Lady Mary Wortley, one of the most celebrated among the female literary characters of England, was the eldest daughter of Evelyn, duke of Kingston, by his wife lady Mary Fielding, the daughter of the earl of Denbigh. She was born about 1690, at Thoresby, in Nottinghamshire, and displaying uncommon abilities at an early age, was educated upon a liberal plan, and instructed by the same masters as her brother, in the Greek, Latin, and French languages. In her twentieth year, she gave an extraordinary proof of her erudition, by a translation of the *Enchiridion* of Epictetus, which was revised by bishop Burnet, by whom her education was ultimately superintended. Her mind was nourished in great comparative retirement, previously to her marriage, in 1712, with Edward Wortley Montagu. Even after her marriage, she lived chiefly at her husband's seat of Wharncliffe, near Sheffield, until the latter, being introduced to a seat in the treasury, by the earl of Halifax (*see the preceding article*), brought his lady to London. Being thus placed in the sphere of the court, she attracted that admiration which beauty and elegance, joined to wit and the charms of conversation, never fail to inspire. She became familiarly acquainted with Addison, Pope, and other distinguished writers. In 1716, Mr Wortley being appointed ambassador to the Porte, lady Mary determined to accompany him, and hence her admirable correspondence, chiefly consisting of letters addressed to the countess of Mar, lady Rich, and Mr Pope; to whom she communicated her observations on the new and interesting scenes to which she was a witness. On many occasions she displayed a mind superior to common prejudices, but in none so happily as in a courageous adoption of the Turkish practice of inoculation for the small-pox in the case of her own son, and a zealous patronage of its introduction into England. In 1718, Mr Wortley returned to England, and at the request of Pope, lady Mary took up her summer residence at Twickenham, and a friendship was formed between these kindred geniuses, which gradually gave way to dislike, produced by difference of political opinion, petulance and irritability on the side of the poet, and no small disposition to sarcastic keenness on that of the lady; and a literary war ensued, which did honour to neither party. Lady Mary preserved her ascendency in the world of rank and fashion until 1739, when, her health declining, she took the resolution of passing the remainder of her days on the continent, not without the world surmising that other causes concurred to induce her to form this resolution. She, however, retired with the full concurrence of her husband, with whom her subsequent correspondence betrays neither resentment nor humiliation. Venice, Avignon, and Chamberry were, in turn, her residence, until the death of Mr Wortley, in 1761, when she complied with the solicitations of her daughter, the countess of Bute, and returned to England, after an absence of twenty-two years. She enjoyed a renewal of family intercourse for a short time only, as she died of a gradual decay, in 1762, aged seventy-two. As a poetess, lady Mary Wortley Montagu exhibits ease, and some powers of description; but she is negligent and incorrect. The principal of her performances in this class is her Town Eclogues, a satirical parody of the common pastoral, applied to fashionable life and manners. As a letter-writer, her fame stands very high; her letters were collected and copied by herself, and presented, in 1766, to the reverend Mr Sowden, of Amsterdam, of whom they were purchased by the earl of Bute: a surreptitious copy of them was published in 1763, in three vols., 12mo. The authenticity of these letters, which obtained universal admiration for their wit, judgment, and descriptive powers, was, for a long time, doubted; but all distrust was done away by the following publication, under the sanction of the earl of Bute: the Works of the Right Honourable Lady Mary Wortley Montagu, including her Correspondence, Poems, and Essays, published by permission from her genuine papers (London, 1803, 6 vols., 12mo), with a Life, by Mr Dallaway. This edition contains many additional letters, written in the latter part of her life, which display much excellent sense and solid reflection, although tinged with some of the prejudices of rank, and indicative of increasing misanthropy.

MONTAGU, Edward Wortley, the only son of the subject of the preceding article, was born in 1713. At an early age, he was sent to Westminster school, from which he ran away three times, and, associating himself with the lowest classes of society, passed through some extraordinary adventures, sailed to Spain as a cabin-boy, and was at length discovered by the British consul at Cadiz, and restored to his family. A private tutor was then provided for him, with whom he travelled on the continent. During his residence abroad, he wrote a tract, entitled Reflections on the Rise and Fall of Ancient Republics. On his return to England, he obtained a seat in the house of commons; but, living extravagantly, he became involved in debt, and left his native country never to return. His future conduct was marked by eccentricities not less extraordinary than those by which he had been distinguished in the early part of his life. He went to Italy, where he professed the Roman Catholic religion; and from that he apostatized to become a disciple of Mohammed, and a scrupulous practiser of the formalities of Islamism. After passing many years in Egypt, and other countries bordering on the Mediterranean, he was about to return to England, when his death took place at Padua, in Italy, in 1776. He was the author of an Examination into the Causes of Earthquakes, and some papers in the Philosophical Transactions.

MONTAGU, Elizabeth, a lady of literary celebrity, was the daughter of Matthew Robinson, of the Rokeby family, and was born in 1720. She had an opportunity of prosecuting her studies under the direction of doctor Conyers Middleton, to whom she was probably indebted for the tincture of learning which so remarkably influenced her character and manners. In 1742, she became the wife of Mr Montagu, who left her mistress of a handsome fortune, which enabled her to gratify her taste for study and literary society. In 1769, she published an Essay on the Writings and Genius of Shakspeare. This work raised Mrs Montagu to the rank of an arbitress of public taste. She opened her house, in Portman-square, to the Blue Stocking Club—a society so denominated from a peculiarity in the dress of Mr Benjamin Stillingfleet, one of the members; and carried on an epistolary correspondence with men of letters, published after her death, August 25, 1800.

MONTAIGNE, Michel de, one of the most ingenious and ingenuous of French writers, was born Feb. 28, 1533, at the castle of the same name, belonging to his family, in Perigord. His father, Pierre Eyghem, seigneur de Montaigne, an Englishman by birth, and a brave soldier, who had been chosen mayor of Bourdeaux, bestowed the greatest care on the cultivation of young Michel's promising talents, but adopted a peculiar mode of education. In order to facilitate his son's acquisition of the Latin language, which he had himself found difficult, he employed a German tutor, entirely ignorant of French, but complete master of Latin, before the child had left the nurse's arms; and as all the family were never permitted to speak any other language in the presence of the child, he had the pleasure of seeing the infant so completely matriculated into it as to be obliged to learn the French as a foreign tongue. "We all Latinized," says Montaigne, "at the castle, in such a manner that several Latin expressions came into use in the villages around, which exist to this time." Greek he learned in the usual manner, after it had been attempted in vain to delude him into a knowledge of it. The treatment of his father was peculiar in some other respects; thus he caused him to be waked in the morning by the sound of musical instruments, lest the genius of the boy should be injured by his being roused too suddenly; he allowed him the most unrestrained indulgence in his plays, and endeavoured to lead him to the faithful performance of his duties solely by inspiring him with a sense of right and wrong. Montaigne always shows the greatest regard for his father's memory. At the age of thirteen, he had finished his studies at the college of Bourdeaux, under Grouchy, Buchanan, and Muret. His father destined him for a judicial station, and married him somewhat later to Françoise de la Chassaigne, daughter of a counsellor of the parliament of Bourdeaux. Montaigne was for some time a parliamentary counsellor, but his aversion to the duties of the station led him to retire from it. The study of man was his favourite occupation. To extend his observations, and to restore his health, which had been shattered by the attacks of a hereditary disease (the stone), he travelled in Germany, Switzerland, and Italy, and was everywhere received with great distinction. At Rome, which he visited in 1581, he received the title of a Roman citizen. In 1582, he was chosen mayor of Bourdeaux, and the citizens of that place were so well satisfied with his administration, that they sent him to the court (in 1584), to attend to their interests there. Without doubt, the order of St Michael was conferred on him by Charles IX., at this time, without any solicitation on his part, as has been reported. After making several other journeys of business, he returned to his castle, and devoted himself entirely to philosophy. His quiet, however, was disturbed by the troubles which distracted France in consequence of the cruel persecutions of the Huguenots; his castle was plundered by the leaguers, and he himself was ill treated by their adversaries. To these causes of distress was added the plague, which broke out in Guyenne, in 1586, and compelled him to leave his estate, with his family, and wander through the country, which was then the theatre of all kinds of atrocities. He then resided some time in Paris, but finally returned home, and died in 1592, after much bodily suffering, with the composure of a philosopher.

Montaigne has described himself in his celebrated *Essais*; but he confesses only the lighter faults. He acknowledges himself indolent and averse to restraint, and complains of the badness of his memory. He had few of what are commonly called friends, but to his chosen intimates he was warmly attached. He loved to converse on familiar terms with educated men, whose observations were *teints d'un jugement mûr et constant, et mêlés de bonté, de franchise, de gaieté et d'amitié.* He was also fond of the society of handsome and intelligent women, although he says one should be on his guard against them. The imagination he considered a fruitful source of evil. He had many ideas on education which have been revived in our times, without his receiving the credit of them; he wished that children should enjoy both physical and moral freedom; swathing he considered as injurious, and was of opinion that habit would enable us to dispense with all clothing. His views on legislation and the administration of justice enlightened his own age and have been useful to ours. He endeavoured to simplify the laws and legal processes, and very justly remarks that laws are often rendered futile or injurious by their excessive rigour. His moral system was in general indulgent, but on some points strict. Speculative philosophy he rejected, devoting himself to the lessons of experience. He studied human nature in children and illiterate peasants. Equally removed from a general scepticism and from dogmatism, he was accustomed to suggest possibilities instead of making assertions, and to throw light on his subject from every point. His motto was *Que sais-je?* His great work, his *Essais* (first published in 1580, and often republished and translated into many languages), contains a treasure of wisdom. It may still be deemed one of the most popular books in the French language. The essays embrace a great variety of topics, which are touched upon in a lively entertaining manner, with all the raciness of strong, native good sense, careless of system or regularity. Sentences and anecdotes from the ancients are interspersed at random with his own remarks and opinions, and with stories of himself, in a pleasant strain of egotism, and with an occasional license, to which severer casuists can with some difficulty reconcile themselves. Their style, without being pure or correct, is simple, bold, lively, and energetic, and, according to La Harpe, he "impressed on the French language an energy which it did not before possess, and which has not become antiquated, because it is that of sentiments and ideas, and not alien to its idiom. It is not a book we are reading, but a conversation to which we are listening; and he persuades, because he does not teach." The best edition is that of Coste (3 vols. 4to, London, 1724). His style, though not always pure and correct, accurate and elevated, is original, simple, lively, bold, and vigorous. Besides his Essays, his Voyages deserve mention, although not intended for publication. Montaigne also translated, at the request of his father, a treatise on natural theology, by Raymond Sebonde. There are two English translations of the Essays, one by Charles Cotton, and an earlier one by John Florio.

MONTALEMBERT, Marc Rene, marquis de, born at Angouleme, in 1714, entered the army in his eighteenth year, served in the campaign of 1733, and distinguished himself at the sieges of the Kehl and Philippsburg. As a reward for his services, the company of the prince of Conti's guards was given him. After the peace, he devoted his leisure to the sciences, and entered the academy in 1747, whose memoirs contain some of his papers, no less remarkable for the originality of their ideas than for their purity and elegance of style. During the seven years' war, he was stationed with the Russian and Swedish armies, and, at later periods, was sent to Brittany and the isle of Oleron, the latter of which he fortified on his new system. In 1779, he erected a wooden fort on the island of Aix, which astonished scientific men by its strength and completeness. His extravagance obliged him, in 1790, to sell his estate in the Angoumois, for which he received payment in assignats, and passed the rest of his life in poverty. As a partisan of the revolution, he (1789) surrendered his pension, which had been conferred on him on account of the loss of an eye. During the stormy period of the revolution, he was imprisoned. He died in 1800. Among his works are *La Fortification perpendiculaire, ou Art défensif supérieur à l'Art offensif* (11 vols. 4to); *Mémoire sur les Affûts de la Marine; Reflexions sur le Siége de Saint Jean d'Arc; Mémoires ou Correspondence avec les Généraux et les Ministres*, from 1761 to 1791; with some comedies, tales, and *chansons*.

MONTANUS, in the middle of the second century, bishop of Pepuza, in Phrygia, an illiterate man, who gave himself out for the promised Comforter, who was to bring to perfect maturity the Christian system. In his doctrines, he deviates from the received opinions only in maintaining that all true Christians receive the inspirations of the Holy Ghost. The chiliastic or millennarian notions, and his rigid adherence to the letter of the law, he had in common with the Judaizing Christians; and the moral peculiarities of his sect consisted merely in a more strict observance of externals, frequent fasts, the contempt of heathenish learning and worldly conveniences, abstinence from second marriage, and a willingness to submit to celibacy and martyrdom. His disciples called themselves *Pneumatici*, from a belief in their superior spiritual perfection; they were also called *Pepuzians* and *Phrygians*, because their doctrines principally prevailed in Phrygia and Asia Minor in general. Tertullian, himself a Montanist, defends their monastic rigour. On the other hand, the Alexandrian school, which was inclined to the Gnostic dogmas, opposed their fanaticism till they became extinct, in the fourth century, with the exception of some remains which survived a short time in Gaul, where the sect had been introduced by Phrygian colonists.

MONTASSAR. See *Caliph*.

MONTAUBAN; a city of France, in the department Tarn and Garonne, see of a bishop, with some public offices and 26,466 inhabitants. It is finely situated and well built. The cathedral, the episcopal palace, the *hôtel de ville*, and the bridge over the Tarn, are particularly worthy of being seen. Lat. 44° 0′ 55″ N.; lon. 1° 21′ E.; 140 leagues south of Paris. During the religious wars in France, Montauban was a stronghold of the Huguenots, and was besieged in 1580 by Montluc, and in 1621 by the troops of Louis XIII., without success. It suffered severely from the dragonnades, under Louis XIV.

MONTAUK POINT; the eastern extremity of Long Island, New York, in Easthampton; lon. 72° W.; lat. 41° 4′ N.; with a light-house.

MONTBELLIARD (in German, *Mümpelgard*); a city of France, in the department of the Doubs, in a fertile plain, commanded by an old castle, formerly the residence of the princes of Montbelliard; 4600 inhabitants. It was formerly strongly fortified, but Louis XIV. captured it, and demolished the works, in 1674. It was ceded to France, with the territory forming a county of the same name, in 1796. Lon. 6° 44′ E.; lat. 47° 31′ N.

MONTCALM DE SAINT-VERAN, LOUIS JOSEPH, marquis of, lieutenant-general in the French service, was born near Nimes, in 1712; after receiving a careful education, entered the military service in his fifteenth year, and distinguished himself on several occasions. In 1756, he was sent to Canada, as commander-in-chief of the French American colonies; and, although exposed, with a feeble army, to the rigours of a severe climate, and neglected by the mother country, he obtained repeated advantages over lord Loudon in the first campaign, gained a complete victory over Abercromby in the second, and fell, under the walls of Quebec, in 1759, in the battle with Wolfe.

MONTE BELLO; an Austrian town in Vicenza, in Italy, thirteen miles south-west of Vicenza; population 1500. Here was an engagement, in 1796, between the Austrians and French under marshal Lannes (q. v.); hence his title of *duke of Monte Bello*.

MONTE CASINO; a celebrated benedictine abbey in the kingdom of Naples, in the province Terra di Lavoro, near the small town of S. Germano, and about forty-five miles from the city of Naples, founded by St Benedict of Norcia, in 529. It is situated on a mountain, from which it derives its name, near the ruins of the ancient Casinum, and is approached by a well-paved and winding road, the ascent of which occupies about two hours. The abbey, after having suffered repeated reverses, finally became considerable for its privileges and its wealth, and in the eleventh and twelfth centuries was the seat of science, particularly of medicine, the celebrated school of Salerno having been founded by the monks of Monte Casino. The church is very magnificent, although overloaded with ornament, and contains the tomb of the founder; the library is valuable, and there are many valuable pictures belonging to the abbey, particularly in the room and tower which St Benedict is said to have inhabited. The monastery has served as a place of refuge to several sovereigns and pontiffs, and was formerly much visited by pilgrims and travellers, who were entertained free of expense. A *hospitium*, with four monks, was also supported at S. Germano, where travellers were received and provided with mules for continuing their journey to the abbey. At present, the road on which it lies is little frequented; the neighbourhood is infested with robbers, and the old abbey has few visitors. See *Benedict St*, and *Benedictines*.

MONTE CIRCELLO (anciently *Circæum promontorium*, or *jugum*); a mountainous cape of Italy, near the sea, and by the ancients called an island, and celebrated as the habitation of Circe, the sorceress, who used to transform her lovers into brute animals. On this promontory once stood a town called *Circæum*; here was a chapel dedicated to Circe, and an altar to Minerva. Fifty miles south-east of Rome; lon. 12° 57′ E.; lat. 41° 17′ N.

MONTECUCCULI, or, more correctly, MONTECUCCOLI, prince Raymond, one of the greatest military commanders of modern times, born in the Modenese, in 1608, bore arms at first in the capacity of a common soldier, under his uncle, and rose successively through all the ranks. His first brilliant exploit was in 1639, when, by a forced march, at the head of 2000 horse, he surprised a body of 10,000 Swedes, and captured all their artillery and baggage. Baner (q. v.), however, hastened to attack the victor, and made him prisoner. Montecuccoli now passed two years of captivity in the assiduous study of the military art. In 1646, he gained a victory over general Wrangel, at Triebel. After the peace of Westphalia (1648), he visited Sweden, and then returned to Modena, where, at a *carrousel* in honour of the marriage of the duke, he had the misfortune to kill his friend, the count Manzani. In 1657, the emperor of Germany sent him to the aid of John Casimir, king of Poland, against Ragotsky and the Swedes. Montecuccoli defeated the Transylvanians, and drove the Swedish forces from Cracow. Charles Gustavus, king of Sweden, then attacked Denmark; but Montecuccoli hastened to its defence, and relieved Copenhagen by land before the Dutch could introduce reinforcements by sea. The peace which followed this success did not leave him long in retirement: the conqueror of Ragotsky was now employed to protect that prince against the Turks. He compelled them to withdraw from Transylvania, and, by a wise system of delay, baffled all the attempts of their formidable force, until the arrival of the French, by whose aid he gained the great victory of St Gothard (1664). This victory led to a peace, and Montecuccoli was made president of the imperial military council. On the breaking out of the war between the empire and France, he was placed at the head of the imperial troops, and checked the progress of Louis XIV., by the capture of Bonn, and by forming a junction with the prince of Orange, in spite of Turenne and Condé. The next year, the chief command was taken from him, but was restored in 1675, that he might make head against Turenne, on the Rhine. Montecuccoli was the only adversary worthy of that great commander. They spent four months in following and observing each other, each conjecturing the movements of his opponent by what would be his own in the same circumstances, and they were never deceived. They were on the point of risking a battle, when the French general was killed by a cannon ball. (See *Turenne.*) In the letter of Montecuccoli to the emperor, in which he speaks of the death of his great rival, he says that he cannot help regretting the loss of a man who was an honour to human nature: these words he had repeated several times on hearing the news of Turenne's death. The prince of Condé could alone dispute the superiority which that event gave him. The prince was at first worsted, but finally succeeded in making head against the imperial commander, who considered this campaign as the most glorious of his life—not because he conquered, but because he was not conquered. Montecuccoli passed the remainder of his life at the imperial court, the patron of learning, and promoted the establishment of an academy for natural science. He died at Lintz, in 1680. His memoirs, written in Italian, are distinguished for conciseness, clearness, and profound and scientific views.

MONTE FIASCONE; a papal town in the Patrimonio, five miles south of Bolsena, ten north-west of Viterbo; lon. 11° 56′ E.; lat 42° 33′ N.; population 3000; see of a bishop. This is by some said to be the ancient Falerium, or Falerii, capital of the Falisci. It is now remarkable only for its situation, and for the hills surrounding it, which produce great quantities of excellent wine, particularly Muscadel.

MONTEM; a singular celebration which takes place every three years at Eton school, England. See *Eton.*

MONTEMAYOR, Jorge de, a celebrated poet, born about 1520, in the small town of Montemayor, or Montemor, not far from Coimbra, in Portugal. He was much less indebted to study than to his natural genius, but he understood several living languages, and his translations from them are characterized by ease and faithfulness. In his youth, he entered the military career, although his inclination attracted him to music and poetry. He afterwards went to Castile, and, being destitute of other means of subsistence, joined the chapel of Philip II. as a singer, and accompanied that prince to Germany, Italy, and the Low Countries. After his return, he appears to have lived in Leon, where he wrote his celebrated Diana, which constitutes him the founder of the Spanish pastoral romance. Queen Catharine, sister of Charles V., and regent of the kingdom, called the poet to her court, and conferred on him an honourable post. By an elegy of Francisco Marcos Droantes, which is contained in all the editions of the Diana, it appears that he died as early as 1562. Although a Portuguese by birth, he is considered as belonging to Spanish literature, as he wrote in Castilian. Cervantes calls the Diana the finest model of the pastoral romance. Besides that work, which is unfinished, we have a *Cancionero,* or collection of his poems.

MONTENEGRINS; the inhabitants of Montenegro, a country in the western part of Turkey in Europe, in the province of Albania, between lat. 42° 8′ and 43° 5′ N., and lon. 18° 38′ and 19° 35′ E. In the language of the natives, the country is called *Tschernagora,* and received the name of Montenegro (Black Mountain), from the dark colour of the forests which cover its mountains. The inhabitants are Sclavonians, and are described as bold, warlike, and hospitable, but inclined to robbery. They are estimated at about 60,000, of whom 15,000 are capable of bearing arms. The superficial area of the country is 1000 square miles. This district was never reduced by the Turks, and, in 1797, the inhabitants threw off all dependence on Turkey, and formed an independent state, under the protection of Russia. Their ruler is called *wladika,* and is the spiritual and temporal head of affairs. Their language is Illyrico-Sclavonian. They belong to the Greek church, but have their own patriarch. The principal town is Atigne. In 1767, an adventurer by the name of Steffano Piccolo, made his appearance among them, who gave himself out for the Russian emperor Peter III., and excited an insurrection, which was not pacified without much bloodshed.—See Sommières, *Voyage Historique et Politique de Montenegro* (2 vols., 1820).

MONTE NOTTE; a mountain in Italy, on the borders of the state of Genoa and the duchy of Monferrat, seven miles north of Savona, twelve south of Acqui. On the 11th of April, 1796, the Austrians, commanded by general Beaulieu, were defeated by the French under Bonaparte; the imperialists lost 2000 men killed, and as many prisoners.

MONTE NUOVO; a mountain in Naples, thrown up by an earthquake, in the sixteenth century, in the valley of Averno. In forty-eight hours it attained the height of 2100 feet. Some part of it is cultivated. Near the foot of the mountain the sand is very hot from subterraneous fire.

MONTEREAU. See *Chatillon.*

MONTE SANTO. See *Athos.*

MONTEREY, a seaport or bay in New California. Lon. 121° 51′ W. Lat. 36° 36′ N. The bay is spacious, and is situated between Point Pinos, and Point Anno Nuovo. The climate is healthy, but subject to thick fogs.

MONTESPAN, Françoise Athenais de Rochechouart de Mortemart; marchioness de, mistress of Louis XIV., born in 1641, the second daughter of the duke of Mortemart, in 1663, married to the marquis de Montespan. To the most fascinating beauty she also added a natural liveliness and wit, and a highly cultivated mind. Her conversation was gay, natural, and *piquante.* On her first appearance at court, as the queen's *dame du palais,* Mlle. de la Vallière possessed the favour of the monarch; but the grace, beauty and wit of the lovely marchioness soon made an impression on him (1668), and it was not long concealed from the courtiers—although the pious queen was slow to credit it—that, while that voluptuous prince already had one mistress at court, he was living in double adultery with another. Her husband had been ordered to retire to his estates, and Mme. de la Vallière withdrew in 1674. The first child of this adulterous connexion was born in 1672, and the birth was carefully concealed. The education of the children was committed to Mme. Scarron, afterwards De Maintenon, under the strictest injunctions of secrecy; but this exterior of decency was soon laid aside, and they were openly avowed. The influence of the favourite mistress was often exercised in public affairs, and her advice was often formally asked and followed. Several transient passions of the king still left her her power, until age and long possession, remorse, and a growing attachment to Mme. de Maintenon finally overcame his passion, and the frequent quarrels of the two ladies finally estranged his affections from Mme. de Montespan. She rarely appeared at court after 1685, and, in 1691, she entirely quitted it. Her last years were devoted to religious exercises, acts of benevolence and penitence. She died in 1707.

MONTESQUIEU, Charles de Secondat, (baron de la Brède et de,) was descended from a noble family of Guienne, and was born Jan. 18, 1689, at the castle of Brède, near Bourdeaux. When only twenty years old, this philosophical genius collected materials for his *Esprit des Lois*. An uncle, who was president of the parliament of Bourdeaux, left him his property and office. In this sphere of action, Montesquieu tried to be useful in various ways. In the academy which was formed at Bourdeaux, he delivered many excellent lectures on history, sought to attract attention to the natural sciences, in his time almost entirely neglected, and, for that purpose, projected the plan of a *Histoire physique de la Terre, ancienne et moderne*, (which, however, as his efforts were afterwards turned in other directions, was never finished), &c. In 1721, he came before the public with his *Lettres Persanes*, which he had begun in the country, and finished in the leisure hours that his business left him. This work, profound under the appearance of levity, announced a distinguished writer. It gives a most lively and correct picture of French manners: with a light and bold pencil, he portrays absurdities, prejudices, and vices, and has the skill of imparting to all an original character. All his letters are, however, not of equal value: some contain paradoxes and coarse satires against the reign of Louis XIV. These letters introduced Montesquieu into the French academy, although this society was by no means spared in them; and cardinal Fleury, justly offended at the Persian's mockery of the Christian religion, opposed his reception. The discourse which he delivered on the occasion of his admission, in 1728, was short, but energetic, and rich in ideas. In order to collect materials for his great work, the *Esprit des Lois*, he resigned his office in Bourdeaux, in 1726, and, after his reception into the academy, began to travel through Germany, Hungary, Italy, Switzerland, Holland, and England. In the last country, he spent about two years, and was made member of the royal society of sciences in London. The result of his observation was, that Germany was the place to travel in, Italy to reside in for a time, England to think in, and France to live in.* After his return to his *château la Brède*, he finished his work *Sur les Causes de la Grandeur et de la Décadence des Romains*, which first appeared in 1734. His acute remarks and excellent delineations gave to this trite subject the interest of novelty. The lofty spirit which shines in this book is still more conspicuous in the *Esprit des Lois*, which appeared in 1748. In this work, which exhibits the laws of states, in their broad connexion with the other elements of public life, the author distinguishes three forms of government,—the democratic, the monarchical, and the despotic, and shows that the laws must correspond to the principles of these forms. The distinction is of great importance, and leads the author to a great variety of deductions. The style, without always being correct, is energetic. This work may be termed a code of national law, and its author may be termed the legislator of the human family: we feel that it emanates from a liberal heart, regarding the whole human race with affection. In consideration of these sentiments, Montesquieu may be forgiven for labouring to reduce every thing to a system; ascribing to climate and physical causes too much influence over the morals; for the irregularity of his work as a whole, and for having too often drawn general inferences from single cases. But it has been justly complained that we find in this *chef d'œuvre* many excessively long digressions respecting the feudal laws; also the testimony of travellers of doubtful credit; paradoxes instead of truths, and jests instead of reflections. He has therefore been accused of indefiniteness, forced expressions, and want of connexion. It is, however, undeniable, that this book is for the philosopher a storehouse of investigations; and no one has ever reflected more profoundly than Montesquieu on the nature, foundation, manners, climate, extent, power, and peculiar character of states; on the effects of rewards and punishments; on religion, education, and commerce. To a criticism by the abbé Bonnaire, Montesquieu replied in his *Défense de l'Esprit des Lois*. He died at Paris, Feb. 10, 1755, at the age of sixty-six years. Although economical by nature, he could be generous, as in the well-known instance of his bounty at Marseilles, where he gave his purse to a young boatman, and secretly appropriated a considerable sum to release the father of the unhappy man, who had fallen into the hands of Barbary corsairs. It was not discovered till after Montesquieu's death that he was the liberator of the captive. A note respecting the remittance of a sum of money to a banker, found by his executors among his papers, led to the discovery of this act of liberality. It has given occasion to the drama *Le Bienfait anonyme*. His mildness, good humour, and courteousness, were always equal; his conversation easy, instructive, and entertaining. After his death, a collection of his works was published at London, in 1759, (3 vols., 4to). In 1788, there appeared a good edition (in 5 vols.), to which must be added a volume of *Œuvres Posthumes*, that appeared in 1798. The most complete editions are those of Basle, of 1779, in 8 vols., and of Paris, 1796, in 5 vols. They contain several other works of Montesquieu, such as the *Temple de Gnide*, a kind of poem in prose. A history of Louis XI., which he had composed, was lost, being burned by the author by mistake. Under the name of *Charles d'Outrepont*, Montesquieu has unveiled the soul of a tyrant, in a conversation between Sulla and Eucrates. Of his *Lettres familières*, which appeared in 1767, several are interesting. In his twenty-sixth year, Montesquieu married, and the fruits of this marriage were one son and two daughters. The first published a romance, in 1783, Arsace and Ismene, which was probably written by Montesquieu, in his younger years, and, perhaps, intended originally as Grimm suggests, to form an episode in the *Lettres Persanes*. To his grandson, the baron Montesquieu, who died without children, at London, July 27, 1824, Napoleon, from respect to the author of the *Esprit des Lois*, restored the property of his grandfather, which had been confiscated during the revolution.

MONTE VIDEO, or CISPLATINO; a republic of South America, between Brazil on the east and north, Paraguay on the north-west, and Buenos Ayres on the west, washed by the Uruguay, the Rio de la Plata, and the Atlantic. It was declared an independent republic, by a treaty between Buenos Ayres and Brazil, in 1828. See *Banda Oriental*.

MONTE VIDEO, or S. FELIPE; capital of the republic of Monte Video, on the northern bank of the Rio de la Plata, near its mouth; lat. 34° 54′ S.; lon. 56° 14′ W.; 120 miles north-east of Buenos Ayres. Near the port rises the mountain from which it derives its name, and on which there is a light-house

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* He was often accustomed to say, jocosely, of his own conduct in his travels, "In France, I was the friend of every body; in England, of nobody; in Italy, I had to compliment every one, and in Germany, drink every where."

The city is built on a gentle ascent, and is fortified; the streets are wide, straight, and well-paved; the houses generally of one story, with flat roofs. The principal building is the cathedral. The climate is moist; storms are frequent in summer, and the cold is severe in the winter months, June, July and August. The port is the best on the Plata. The exports are tallow, hides, and salt beef; imports, manufactured goods, coffee, sugar, &c.; population 10,000. Monte Video was built by a Spanish colony from Buenos Ayres, and was a long time an object of ambition to Portugal. When the former shook off the Spanish yoke, the Brazilian court seized the opportunity of taking possession of it. It was recovered, after a long siege, in 1814, and retaken by the Brazilians in 1821. By the treaty of 1828 it became the capital of a republic of the same name. See *Banda Oriental.*

MONTEZUMA; emperor of Mexico, at the time of the Spanish invasion. In 1519, when Cortes arrived on the coast of Mexico, and expressed his intention of visiting the emperor in his capital, Montezuma sent him a rich present, but forbade his farther advance. Cortes, however, heeded not this prohibition, and the emperor, intimidated, began vainly to negotiate for the departure of the Spaniards. His despotic government having made him many enemies, who willingly joined Cortes, and assisted him in his progress to Mexico, he was obliged to consent to the advance of the Spaniards, to whom he assigned quarters in the town of Cholula, where he plotted their destruction. His plot being discovered, a massacre of the Cholulans followed, and Cortes proceeded to the gates of the capital, before Montezuma was determined how to receive him. His timidity prevailed, and, meeting the Spanish leader in great state, he conducted him with much respect to the quarters allotted to him. The mask was, however, soon removed: Cortes seized Montezuma in the heart of his capital, and kept him as a hostage at the Spanish quarters. (See *Cortes.*) He was at first treated with respect, which was soon changed into insult, and fetters were put on his legs. He was at length obliged to acknowledge his vassalage to the king of Spain, but he could not be brought to change his religion. He was constantly planning how to deliver himself and his countrymen; and when Cortes, with great part of his forces, was obliged to march out to oppose Narvaez, the Mexicans rose up and furiously attacked the Spaniards who remained. The return of their commander alone saved the latter from destruction, and hostilities were going forward, when Montezuma, still the prisoner of the Spaniards, was induced to advance to the battlements of the Spanish fortress, in his royal robes, and attempt to pacify his subjects. His address only excited indignation, and, being struck on the temple with a stone, he fell to the ground. Every attention was paid to him by Cortes, from motives of policy; but, rejecting all nourishment, he tore off his bandages, and soon after expired, spurning every attempt at conversion. This event took place in the summer of 1520. He left two sons and three daughters, who were converted to the Catholic faith —Charles V. gave a grant of lands, and the title of *count of Montezuma*, to one of the sons, who was the founder of a noble family in Spain. See Robertson's *History of America.*

MONTFAUCON, Bernard de, a French Benedictine, of the congregation of St Maur, celebrated as a critic and antiquary, was of noble descent, and was born at the castle of Soulage, in Languedoc, in 1655. When young he engaged in military service, which he quitted, and, in 1675, took the monastic vows. In 1688, he published conjointly with fathers Lopin and Pouget, a volume entitled *Analecta Græca, sive Varia Opuscula.* One of his great undertakings was an edition of the works of Athanasius, which appeared in 1698 (in 3 vols., folio). He then visited Rome, where he exercised the functions of agent-general of the congregation; and, on his return from Rome, published an account of his observations, under the title of *Diarium Italicum;* and, in 1706, a collection of the works of the ancient Greek fathers, with a Latin translation, notes and remarks. In 1708 appeared his *Palæographia Græca, sive de Ortu et Progressu Literarum Græcarum.* Among his subsequent labours are the *Hexapla* of Origen (1713, 2 vols, folio); an edition of the works of Chrysostom (13 vols, folio); and *Les Monuments de la Monarchie Française.* His works in folio alone form forty-four volumes. The most important of his productions is the treasure of classical archæology, entitled *L'Antiquité expliquée et representée en Figures,* with the supplement, 15 volumes, folio, containing 1200 plates. His death took place at the abbey of St Germain-des-Prés, 1741. English translations have been published of the *Diarium Italicum* and *Antiquité expliquée.*

MONTFERRAT (*Monteferrato*); formerly a duchy of Italy, bounded by Piedmont, Genoa, and the Milanese; the capital was Casale. It now belongs to the Sardinian territories. Mention is made of a marquis of Montferrat in 980. It was erected into a duchy by Maximilian, in 1573. In 1631, a part of it was ceded to Savoy, by the duke of Mantua, to whose ancestors Charles V. had granted it in 1536. In 1703, the remainder was annexed to the same duchy, by the emperor. Since that period, it has shared the fate of Savoy. See *Savoy.*

MONTFORT, Simon de, earl of Leicester, son of Simon de Montfort, who distinguished himself by his activity, zeal, and severity in the crusade against the Albigenses, was born in France, and, in 1231, retired to England, on account of some dispute with queen Blanche. Henry III. received him very kindly, bestowed upon him the earldom of Leicester, which had formerly belonged to his ancestors, and gave him his sister, the countess dowager of Pembroke, in marriage. Henry soon after appointed him seneschal of Gascony, where he ruled so despotically that the inhabitants sent a deputation to the king, declaring that they would renounce their allegiance if Montfort was not removed. He was accordingly recalled, and, according to some accounts, examined before the lords, but acquitted. A violent personal altercation between the king and the haughty earl ensued, in which the former applied the opprobrious epithet of *traitor* to his subject, and the latter gave his sovereign the lie. A reconciliation was, however, effected, and De Montfort was employed on several occasions, in a diplomatic and military capacity. As the dissatisfaction of the barons with the government assumed a more decided tone, the name of this nobleman is more frequently mentioned. He concerted, with the principal barons, a plan of reform, and, in 1258, they appeared in parliament armed, and demanded that the administration should be put in the hands of twenty-four barons, who were empowered to redress grievances, and to reform the state. These concessions were called the *provisions of Oxford,* the parliament having been holden at that place. The administration of the twenty-four guardians, at the head of whom was Leicester, continued for several years. In 1262, Henry made an attempt to escape from their authority, but was constrained to submit, by the vigour and activity of Leicester, and agreed that their power should be continued during the reign of his successor. This stipulation soon led to new troubles, and both parties finally consented to refer the subject to the arbitration of St Louis. The barons refused to abide by his decision, and hostilities again commenced which resulted in the triumph of Leicester, at the battle of Lewes. His arrogance and rapacity seem to have raised a powerful party against him among the barons, and, according to some, this was the motive which induced him to summon knights of shires and burgesses to the parliament which convened in 1265. Whatever may have been his motives, however, he thus became the founder of the English house of commons. In the same year he fell, at the battle of Evesham, in which the royal forces were led by prince Edward. (See *Edward I.*) In attempting to rally his troops, by rushing into the midst of the enemy, he was surrounded and slain. His body, after being mutilated in the most barbarous and indecent manner, was laid before lady Mortimer, the wife of his implacable enemy. His memory was long revered by the people, as that of one who died a martyr to the liberties of the realm. During the succeeding reign, this feeling was discouraged, but, in the next generation, he was called *St Simon the Righteous.* Miracles were ascribed to him, and the people murmured that canonization was withheld from him. Though Simon de Montfort was slain, his lifeless remains outraged, and his acts branded as those of a usurper, yet, in spite of authority and prejudice, his bold and fortunate innovation survived. He disclosed to the world (whether conscious or not of the importance of his measure), the great principle of popular representation, which has drawn forth liberty from the walls of single cities, has removed all barriers to the extent of popular governments, and has given them a regularity, order, and vigour which put to shame the boasted energy of despotism.

MONTGOLFIER, JACQUES ETIENNE, the inventor of the balloon, the son of a paper maker, was born at Vidalon-lès-Annonai, in 1745, and, with his elder brother, *Joseph Michael* (born 1740, died 1810), devoted himself to the study of mathematics, mechanics, physics, and chemistry. They carried on the manufactory of their father together, and were the first who made vellum paper. Joseph was also the inventor of the water-ram, which raises water to the height of sixty feet. His brother died in 1799. See *Aeronautics*.

MONTGOMERY, GABRIEL count de; a French knight, celebrated for his valour and his fate. In his youth, he was the innocent cause of the death of Henry II. That prince had already broken several lances, at a tournament held in 1559, in honour of the marriage of his daughter Elizabeth with Philip, king of Spain, when he desired to run a tilt with the young Montgomery, then a lieutenant in the Scotch guards. The latter consented with great reluctance, but finally yielded, when he saw that Henry was displeased with his refusal. In the encounter, his lance struck with such violence on the visor of the king, as to raise it, and pass through his head, just above the right eye. The prince died eleven days after, commanding that Montgomery should not be proceeded against on account of the accident. The latter retired to his estate in Normandy, which he left, for a time, to travel, and returned to France at the time of the first civil war, in which he acted as a leader of the Protestants. He defended Rouen with great bravery against the royal army, in 1562, and, on the capture of the city, made his escape to Havre. On the night of St Bartholomew's, he was at Paris, but succeeded in saving himself by flight, and went to England. In 1573, he brought a powerful fleet, partly fitted out at his own expense, to the relief of Rochelle, which was besieged by the Catholics, but did not effect any thing, and, returning to Normandy, connected himself with the Protestant *noblesse* of that province. After several battles, he was obliged to throw himself into the castle of Domfront, where, in spite of a vigorous resistance, he was at length overpowered (May 27, 1574), and made prisoner, by the royalist general Matignon. By the command of Catharine of Medici, Matignon transferred his captive to Paris, where he was beheaded, June 26 of the same year, displaying the most heroic courage on the scaffold.

MONTH; the twelfth part of the year, and so called from the moon, by whose motions it was regulated, being properly the time in which the moon runs through the zodiac. (For the civil division of months, see the articles *Calendar*, and *Epoch*.) The lunar month is either illuminative, periodical, or synodical. *Illuminative month* is the interval between the first appearance of one new moon and that of the next following. As the moon appears sometimes sooner after one change than after another, the quantity of the illuminative month is not always the same. The Turks and Arabs reckon by this month. *Lunar periodical month* is the time in which the moon runs through the zodiac, or returns to the same point again, the quantity of which is 27 days, 7 hours, 43 minutes, 8 seconds. *Lunar synodical month*, called also a *lunation*, is the time between two conjunctions of the moon with the sun, or between two new moons, the quantity of which is 29 days, 12 hours, 44 minutes, 3 seconds, 11 thirds. The ancient Romans used lunar months, and made them alternately of 29 and 30 days. They marked the days of each month by three terms, viz., *calends*, *nones*, and *ides*. *Solar month* is the time in which the sun runs through one entire sign of the ecliptic, the mean quantity of which is 30 days, ten hours, 29 minutes, 5 seconds, being the twelfth part of 365 days, 5 hours, 49 minutes, the mean solar year. *Astronomical*, or *natural month*, is that measured by some exact interval, corresponding to the motion of the sun or moon; such are the lunar and solar months above mentioned. *Civil*, or *common month*, is an interval of a certain number of whole days, approaching nearly to the quantity of some astronomical month. These may be either lunar or solar. The *civil lunar month* consists alternately of 29 and 30 days. Thus will two civil months be equal to two astronomical ones, abating for the odd minutes; and so the new moon will be kept to the first day of such civil months, for a long time together. This was the month in civil or common use among the Jews, Greeks, and Romans, till the time of Julius Cæsar. The *civil solar month* consisted alternately of 30 and 31 days, excepting one month of the 12, which consisted only of 29 days, but every fourth year of 30 days. The form of civil months was introduced by Julius Cæsar. Under Augustus, the sixth month (till then, from its place, called *Sextilis*) received the name *Augustus* (now *August*), in honour of that prince; and, to make the compliment still greater, a day was added to it, which made it consist of 31 days, though till then it had only contained 30 days; to compensate for which a day was taken from February, making it consist of 28 days, and 29 every fourth year. Such are the civil or calendar months now used through Europe.

Month, in English statutes is a lunar month, of 28 days, unless otherwise expressed.

MONTI VINCENZO, one of the most celebrated modern poets of Italy, born at Fusignano, in the territory of Ferrara, about 1753, studied at Ferrara, after which he went to Rome, where he found patrons, and was appointed secretary of Luigi Braschi, nephew of the pope. As he wore the clerical dress, he was called *abbate Monti*. The Arcadia received him as a member. Excited by the fame of Alfieri, he wrote two tragedies—*Galeotto Manfredo*, and *Aristodemo*—the splendid style of which was indeed admired, but the plots were thought too tragic, and dramatic action was wanting. The murder of the French ambassador Basseville, at Rome, gave occasion to the poem *Basvilliana*, in which he closely imitates Dante. This work, distinguished for the splendour of some of its passages, gained him a well-deserved reputation. Two other poems, the *Musogonia* and *Feroniade*, are less known in their original form, for, the French having soon after entered Rome, the author suppressed the first edition, and prepared a second, in which the reproaches formerly directed against Bonaparte and his army were levelled against the allied princes. Monti was now appointed secretary of the directory of the Cisalpine republic in Milan. He was accused, indeed, of having acted, on a mission to Romagna, the part of a new Verres; but his verses, in which he artfully flattered the existing powers, kept him in office. The campaign of Suwaroff in Italy, in 1799, obliged him to flee to France. The battle of Marengo restored him to Milan, where he sung the Death of Mascheroni. This poem excited almost as much admiration as the *Basvilliana*, but, as some satirical hits gave offence, he did not finish it. He was scarcely appointed professor of belles-lettres at the college of Brera when he received an invitation to Pavia, as professor of eloquence; but Napoleon appointed him historiographer of the kingdom of Italy, with the charge of celebrating his achievements. Accordingly the poet composed his *Bardo della Selva nera*, of which six cantos appeared in 1806. This very singular work met with strong disapprobation, against which Monti attempted a vindication, in a letter to Bettinelli. He then went to Naples to join Joseph Bonaparte, where he published the seventh canto of the *Bardo*, which was received with no more approbation. His tragedy *Cajo Gracco* likewise found little favour, as also some musical dramas. The poetry was considered as too close an imitation of Dante, though not without many beauties. Monti now translated the Satires of Juvenal, and (without, as he confessed himself, understanding Greek) the Iliad of Homer. In 1815, he composed for the city of Milan a cantata in honour of the emperor Francis. He died in October, 1828. Monti cannot be denied the praise of great poetic talent; his countrymen called him *il Dante engentilito*. His *Proposta di alcune Correzioni ed Aggiunte al Vocabolario della Crusca* contains a treasure of critical and lexicographical information on the Italian language. A complete edition of his works, with a notice of his life, has been announced by his daughter.

MONTMARTRE; a village and height near Paris, rendered celebrated in recent history by the military events of which it was the theatre during the two occupations of the French capital by the allied forces. According to some, it derives its name (*Mons Martis*) from a temple of Mars which formerly stood on its summit; it was afterwards called *Mons Mercurii* (probably because the temple was converted to his service); and, at a later period, in consequence of the death of St Denis and his disciples here, it acquired the name of *Mons Martyrum;* and a chapel took the place of the heathen temple. In the war with Lothaire (978), the chronicles relate that Otho II., emperor of Germany, caused a hallelujah to be chanted by the monks from the heights of Montmartre, with such a power of lungs as to terrify all Paris. In 1096, Bouchard de Montmorency, to whom it belonged, founded a convent of monks here, which, in 1133, was converted into a nunnery by queen Adélaide (wife of Louis le Gros). This abbey afterwards became noted for the dissolute manners of its inmates. Henry IV., during the siege of Paris, fixed his headquarters here. When the allies entered France, in 1814, Napoleon caused the heights to be fortified; and about 15,000 men defended it a whole day against 40,000 of the allied troops. Montmartre was again fortified in 1815, but was not attacked. It affords a good view of the capital, and is occupied by country-seats and several charitable institutions and manufactories. Large quantities of plaster of Paris are obtained from its quarries.

MONTMIRAIL, BATTLE OF, in 1814. See *Chatillon.*

MONTMORENCY, or ENGHIEN; a village about nine miles from Paris, situated on a rising ground, which overlooks the celebrated valley of Montmorency, on the borders of the forest of the same name. In this beautiful valley is the hermitage where Rousseau wrote his *Emile*, and his *Nouvelle Héloïse*, and which was afterwards occupied by Grétry. The garden attached to it contains a bust of the former, and a marble monument to the memory of the latter. Montmorency is now a watering-place, containing sulphureous springs, which supply 400 baths a day. The vicinity affords agreeable walks.

MONTMORENCY, ANNE DE, peer, marshal, and constable of France, born in 1493, one of the greatest generals of the sixteenth century, distinguished himself under Francis I. in the wars against Charles V., and followed his sovereign to Italy, where he was made prisoner with him at the battle of Pavia (1525), which was fought against his advice. Francis conferred on him the dignity of constable in 1538, on account of his important public services. He afterwards, however, lost the favour of the king, on account of his having advised him to trust to the professions of Charles, who, while in France, promised the restoration of Milan. In the reign of Henry II., Montmorency recovered his former influence, but, owing to the hatred of Catharine of Medici, lost his consideration in the reign of Francis II. The risings of the Huguenots occasioned his recall to the court of Charles IX., and he joined the duke of Guise in opposition to Condé, who was at the head of the Protestants. The consequence was a civil war, which broke out in 1562. In the battle of Dreux, Montmorency was made prisoner by the Huguenots, and Conde was captured by the royal troops. The former was liberated the next year, and in the second civil war gained a decisive victory over the Huguenots, November 10, 1567, but died of the wounds received in the action, at the age of seventy-four years.

MONTMORENCY, HENRY II., duke de, born 1595, was in his eighteenth year created admiral of France. After having defeated the Calvinists in Languedoc, and taken from them several strong places, he gained a victory over them by sea, near the island of Ré, which fell into his hands. In 1628, he gained decisive advantages over the duke de Rohan, leader of the Huguenots. During the war against Mantua, in 1630, he held the chief command in Piedmont, and defeated the Spaniards under Doria, although they were superior to him in number. This victory was followed by the relief of Casale, and his services were rewarded with the marshal's baton. Montmorency now thought himself powerful enough to brave the influence of Richelieu, and, with Gaston, duke of Orleans, who was equally dissatisfied with the cardinal, raised the standard of rebellion in Languedoc. La Force and Schomberg were sent against them; they met at Castelnaudary, and Montmorency, who, to inspirit his men, had thrown himself into the royal ranks, was wounded and made prisoner. Gaston remained inactive. All France, mindful of his services, his virtues, and his victories, desired that the rigour of the laws might be softened in his favour; but Richelieu was resolved to make an example of the bravest, most generous and most amiable man in France, and the marshal was condemned to death by the parliament of Toulouse. The king extended his mercy so far as to allow the execution to be private, and it took place in the *hôtel de ville*, in Toulouse, October 30, 1632.

MONTMORENCY, Falls of; a beautiful cascade, on a river of the same name, in Lower Canada, seven miles below Quebec. The falls are very near the junction of this river with the St Lawrence. The breadth of the river at the top of the cascade is about 100 feet, and the perpendicular descent 246 feet.

MONTPELLIER; a city of France, capital of Hérault; lon. 3° 53′ E.; lat. 43° 36′ N.; 70 miles north-west of Marseilles, 375 miles from Paris. It is an episcopal see. Population, 35,850. It is situated five miles from the sea, between the small rivers Masson and Lez, on a declivity. Many of the streets are steep and irregular, and in the interior of the town they are winding, narrow, and dark. In the suburbs are the most regular streets, and the best houses; the buildings are mostly of stone. It contains a cathedral, numerous churches, hospitals, and other charitable institutions. The public promenade, called *Peyrou*, is one of the finest in Europe; an equestrian statue of Louis XIV. was erected in it in 1829. Montpellier has long been the seat of a celebrated university, particularly famous for its school of medicine; this still subsists, under the name of an academy, and has three faculties. The anatomical theatre is capable of containing 2000 persons. Other establishments are a botanical garden, museum, cabinet of natural history and anatomy, the observatory, and public library of 35,000 volumes and many valuable manuscripts. It is defended by a citadel, which commands the town and neighbourhood. The principal manufacture is verdigris, in which it carries on a considerable trade, as also in wool, which is brought from the Mediterranean; wine, aqua vitæ, Hungary water, cinnamon water, essence of bergamot, lemons, &c., and likewise great quantities of woollen carpets, fustians, and silk stockings. These commodities are sent by the canal to Cette, which is the seaport of Montpellier. This town is particularly celebrated for the salubrity of its air, and for its extensive and interesting prospects, which on the one hand embrace the Pyrenees, and on the other the Alps. It is much visited by invalids from foreign countries.

MONTPENSIER, Ann Maria Louise, of Orleans (usually known as mademoiselle de), was born at Paris in 1627. Her father, Gaston, duke of Orleans, bequeathed his eccentric, impetuous, and vindictive temper to his daughter. She joined the faction of Condé in the war of the Fronde, and had the boldness to fire upon the troops of Louis XIV. from the Bastile. This outrage awakened the hostility of the king and the court against her, so that they opposed every plan of marriage which was agreeable to her, and made only such propositions as she could not but refuse. At the age of forty-four, she determined to give her hand to count Lauzun. She obtained permission to take this step, and brought him a fortune of 20,000,000 of francs, four duchies, the seigneury of Dombes, the county of Eu, and the palace of Luxembourg. The contract was already concluded when the queen and the prince of Condé persuaded Louis XIV. to retract his consent. It has been supposed, however, that the parties were secretly married; but it is not settled whether it was before or after the ten years' imprisonment of Lauzun, at Pignerol, for his conduct towards Mad. Montespan. He finally obtained his freedom on condition that the duchess should cede the seigneury of Dombes and the county of Eu to the duke of Maine. She gladly consented to this sacrifice for the sake of living with him; but her happiness was of short duration. Lauzun saw in her a violent and ambitious woman, yet glowing with the passions of youth, and she looked upon him as ungrateful, perfidious, and false. His insolence finally so exasperated the princess, that she forbade him ever to appear again in her presence. She lived in retirement from that time, and died in 1693, little regretted and almost forgotten. Her Memoirs are interesting.

MONTREAL; a city of Lower Canada, the first in size, and the second in rank, in that province. It is in a district of the same name, and on the south side of the island of Montreal, in the St Lawrence, at the head of ship navigation. It is 180 miles above Quebec, 200 below lake Ontario, 243 from Albany, and 300 from Boston; lat. 45° 30′ N.; lon. 73° 22′ W.; population, in 1821, 18,767; in 1830, about 25,000. The harbour, though not large, is always secure for shipping during the time that the river is not frozen; and vessels drawing fifteen feet of water can lie close to the shore. The general depth of water is from three to four and a half fathoms. The greatest inconvenience is the rapid of St Mary, about a mile below the city: vessels cannot ascend this without a strong wind from the north-east. Montreal is divided into Upper and Lower town, but one is very little elevated above the other. The streets are for the most part laid out in a regular manner, generally rather narrow, excepting the new ones. The houses are mostly built of grayish stone, with roofs covered with sheet-iron or tin. Many of them are large and handsome, and in modern style. The principal public buildings are the general hospital, the Hotel Dieu, the convent of Notre Dame, a magnificent French cathedral, an English church, the Catholic seminary, the Protestant college, the courthouse, and the government-house. Montreal is the great emporium of the fur trade, which is of vast extent and importance. It is also the channel through which commerce is carried on between Canada and the United States. A canal, nine miles long, has been completed around one of the rapids below the city, called the *Lachine canal*. A regular steamboat communication is kept up, during the summer, between Montreal and Quebec. A great portion of the inhabitants are of French descent; and the French and English languages are about equally spoken in the transaction of ordinary business, and even in the courts of justice. There is a college at Montreal, styled *university of M'Gill college*, endowed by the late honourable James M'Gill, and chartered in 1821. Its governors are the governor in chief, the lieutenant-governors of Lower and Upper Canada, the lord bishop of Quebec, the chief-justice of Upper Canada, and the chief-justice of Montreal, for the time being. It has a principal and eight professors. There is another institution, called the *college of Montreal*, which has a principal and four professors. The mechanics' institution, the natural history society, the library of 8000 volumes, and the advocates' library, are of great utility.

MONTREAL; an island of Lower Canada, in the river St Lawrence, at the confluence of Ottawa river, thirty-two miles long and ten and a half broad. It forms the county of Montreal, and is divided into nine parishes. In general, its surface is level, and it is extremely fertile. The largest mountain on the island is one mile distant from the city. The base is surrounded by neat country houses and gardens, and the mountain itself is covered with lofty trees. The view, from this elevation, embraces the city, the river, and a wide extent of the surrounding country.

MONTROSE, James Graham, marquis of, a distinguished royalist under Charles I., descended from the royal family of Scotland. He entered the Scotch guards in France. On his return, he excited the jealousy of the marquis of Hamilton, in consequence of which he met with such neglect that he joined the covenanters; but, afterwards returning to the royal side, he was zealous in his service of the king, and gained the battles of Perth, Aberdeen, and Inverlochy, in recompense for which he was created a marquis. In 1645, being defeated by Lesley, he left the kingdom, and remained abroad until 1650, when he came to Orkney, with a few followers; but, being taken, he was conveyed to Edinburgh, where he was hanged and quartered, May 21, 1650.

MONTROUGE; a village of France, near Paris, at which is the entrance to the vast catacombs (q. v.), which extend under a part of Paris, and contain the bones of twenty generations. The remains of the French army, after the battle of Waterloo, were rallied on the plains of Montrouge.

MONTSERRAT; one of the Little Antilles, or Caribbee islands, belonging to Britain; lat. 16° 47′ N.; lon. 62° 15′ W. It is about nine miles long, and nearly as wide, and contains 30,000 acres, of which two thirds are mountainous and barren. The exports are sugar, rum, cotton, and indigo; the population, 8000, of which 6500 are slaves. Plymouth is the chief place. The island was discovered by Columbus, in 1493, and colonized by the British, in 1632.

MONTSERRAT (*Monserrado*); a mountain in Spain, in the province of Catalonia, twenty-four miles south-west of Barcelona, which has its name from its numerous peaks, resembling the teeth of a saw. It is famous for its ancient Benedictine monastery, which was partly destroyed, in 1812, by the French. The monastery is composed, in part, of thirteen hermitages, which are accessible only by steps hewn out of the steep rock. The youngest monks occupy the highest, at an elevation of 3000 or 4000 feet. They are supplied with provisions from the monastery, by mules trained for the purpose; they hear the sound of the bells, the music of the organ, and the singing of the choir, but assemble only on festival days to perform divine service in the monastic chapel. Many of these hermits have only room for a small hut; others have also a small garden. Some of their dwellings appear to be suspended in the air, and can be approached only by means of ladders and bridges, over terrible precipices. The inmates gradually descend as the tenants below them die off, until they inherit a place in the monastery which contains the tombs. The mountain is full of narrow passes, many of which are fortified. The image of the virgin, pretended to have been found in a cave in the ninth century, draws many pilgrims thither.

MONTUCCI, Antonio, one of the most learned Chinese scholars in Europe, born at Sienna, in 1769, studied at the university there, devoting himself to the living languages with almost incredible application. In 1785, he was made professor of English at the college Tolmei, and, in 1789, accompanied Mr Wedgwood to England as Italian teacher in his family. Here he became acquainted with four young Chinese, obtained from them a copy of the Chinese dictionary *Tching Tseu Thoung*, which was not before known in Europe, and soon formed the plan of preparing a new dictionary of the Chinese language. To meet the expense, he laid his prospectus before several princes and academies, but the king of Prussia was the only person who made him an answer. He set out for Prussia; but the expedition of Napoleon (1806) disappointed his expectations of aid from the Prussian court. He continued, however, to labour on his dictionary, supporting himself by giving lessons in English and Italian. In 1812, he went to Dresden, where he continued to teach, and lectured on the Chinese language and literature. In 1827, he returned to Italy, and died in 1829. His dictionary and a part of his Chinese library had been previously purchased by Leo XII., for the instruction of the missionaries in the Vatican. He was also the author of several compilations, &c., for the study of Italian, and edited the *Poesie inedite* of Lorenzo de' Medici, published at the expense of Roscoe (Liverpool, 1790.)

MONTUCLA, John Stephen; an eminent French mathematician, born at Lyons, in 1725, studied in the college of the Jesuits, and completed his education at Toulouse, with a view to the legal profession. He then engaged in practice as a counsellor, but afterwards devoted himself to the cultivation of mathematical science. He published a treatise on the quadrature of the circle; and in 1758, appeared his *Histoire des Mathématiques* (2 vols., 4to)—a work of great research and ability. He was appointed secretary to the intendant of Grenoble, and subsequently went to Cayenne, with the title of royal astronomer. The latter part of his life was devoted to the augmentation of his history, of which a new edition was published at Paris, in 4 volumes, 4to, in 1799; reprinted in 1810. Montucla also published an enlarged edition of the *Récréations Mathématiques et Physiques* of Ozanam, an English translation of which, by doctor Charles Hutton, appeared in 1803 (4 vols., 8vo). His death took place in 1799.

MONUMENT, in its widest sense, includes every thing by which the memory of a person, period, or event is perpetuated. Monuments of antiquity include writings as well as the productions of the fine and useful arts; for Homer's poems are equally a monument of his time, as the Pantheon or the domestic utensils found amongst the ruins of Pompeii. These monuments are of the greatest interest, leading us back into former ages, and presenting the manners, customs, and institutions of the people. Some are valuable only in their character of memorials, that is, as preserving the memory of certain persons or events; others have an intrinsic value as works of the fine arts. (See *Antiquity*, *Antique*, &c.) The productions of sculpture and architecture, intended to transmit to posterity the memory of remarkable individuals or events, are most generally understood by the term monuments of antiquity. Such as ornament public places, gardens, &c., are chiefly in commemoration of great events. Among the monuments in honour of individuals are tombs and sepulchral edifices or columns. In all ages, and with every nation, we find this description of monument, from the first rude attempts of art to its greatest perfection. The most ancient known to us are the obelisks and pyramids of Egypt, and, perhaps, contemporary with these, the tombs of the Persian kings, which are still beheld with admiration in the ruins of Persepolis. These monuments command our awe by their grandeur and simplicity, in which they are, perhaps, superior to similar works of Grecian art, though the latter excel them in beauty. Hardly any country offered so great a number of monuments as Greece, where they were erected in honour of the victors in battle, and in the solemn games, and of other distinguished men, but were often also thrown away on the undeserving. The warrior had statues and trophies; the victor in the games had statues and pillars. On the isthmus of Corinth, near the temple of Neptune, were statues of the victors in the Isthmian games; in the holy grove of Altis, near Olympia, were those of the victors in the Olympic games. There were also many trophies. Buildings were frequently erected in commemoration of distinguished persons or events, which differed greatly in form and splendour. Thus, in Athens, the choragic monuments were erected in honour of those who had received the prizes as *choragi* in the theatrical and musical games. In these games it was customary for each of the ten guilds of Athens to select one *choragus*, who, at his own expense, undertook the regulation and superintendence of the games. Each endeavoured to surpass the other; the conqueror received a tripod of brass as the prize, which was usually the work of a great artist, and was regarded as an honour to his family. This prize was publicly placed on a small edifice or a single pillar, on which the name of the *choragus* and the date of the games were inscribed. A particular street in Athens was appropriated to these monuments, called the street of *tripods*. Some of these have been preserved to our time. The most splendid of all, and the most ornamented, is the choragic monument. of Lysicrates, usually called the *lantern of Demosthenes*; next to this, the monument of Thrasyllus and Thrasycles, and some pillars. The Romans, who contended with the Greeks in the arts, were equally successful in monuments, of which one species is entirely theirs—the triumphal arch. (See *Triumphal Arch.*) The earliest tombs in Greece and Rome were either erected on the spot where the ashes of the deceased were deposited, or in some other place chosen at pleasure. These latter were termed *cenotaphs*. Both kinds were found in the cities or their vicinity, and scattered along the roads, which they ornamented. The rude stone was by degrees transformed into a noble pillar; subsequently, on a foundation of stone, two small pillars were erected, covered with a pediment, and the intermediate space was destined for the images of the deceased, inscriptions, and bass-reliefs. Small buildings in the form of temples followed, and these, in time, increased in magnificence. The greatest monument of this description was the (so called) *mausoleum* (see *Artemisia*), after which splendid sepulchres are still called *mausoleums*. Modern Europe presents monuments of both kinds. The public monuments commemorative of great events are principally in the capitals, and many of these are described and represented in Sturm's *Architektonische Reiseanmerkungen*. A tolerably good collection was given by the abbé de Lubersac, in his *Discours sur les Monumens publics de tous les Ages et de tous les Peuples* (Paris, 1776, folio). Many of the monuments of France are represented in Millin's *Antiquités Nationales*. The royal *Académie des Inscriptions* has contributed to turn the attention of the French artists to this subject.

MONZA; a city of the Lombardo-Venetian kingdom, seven miles from Milan, on the Lambro. Its beautiful edifices show that it was once a royal residence; the streets are regular and well paved, and there are several handsome palaces, among which that of Mirabello contains many fine paintings and works of sculpture. The cathedral erected by Theodelinda, queen of the Lombards, in the seventh century, is worthy of mention: among its curiosities is the iron crown of the Lombard kings, with the inscription *Guai a chi la tocca*, which Napoleon placed upon his head in 1805, with the words *Dieu me la donne; gare à qui la touche*. The population is 10,500. It was formerly the residence of the kings of Lombardy.

MOON is the name given to the satellites which revolve round the primary planets and illuminate them with light reflected from the sun. In common language, we mean by *moon* the particular satellite of our earth. Like the other heavenly bodies, it daily alters its apparent position among the fixed stars, and, in the course of a month, appears to make a complete revolution round the heavens, from west to east, while, at the same time, it has, like the fixed stars, an apparent daily motion from east to west. Among all the heavenly bodies, the moon is the nearest to us. Its mean distance is estimated at about thirty times the diameter of the terrestrial equator, or 237,000 miles. The point at which it approaches nearest the earth is called its *perigee;* the point of its greatest distance is called the *apogee* It passes through both these points in each revolution. According as it is nearer to, or farther from the earth, its diameter, as seen from the earth, appears larger or smaller. At its mean distance this amounts to thirty-one minutes and nine seconds. Astronomers make the moon's actual diameter $3\frac{2}{3}$ times smaller than that of the earth; therefore the superficies of the moon equals but $\frac{1}{14}$ of the earth's, and its solid contents equals but $\frac{1}{50}$. In the moon's revolution great inequalities are remarked. These arise mostly from the strong attraction of the sun in the various positions which it assumes relatively to the earth. This was first understood after Newton's discovery of the universality of the law of gravity. Tobias Mayer published the first accurate lunar tables. As the moon completes her revolution about the earth in twenty-seven days, eight hours, or more accurately, in twenty-seven days, seven hours, forty-three minutes, five seconds, it passes daily, on an average, through 13° 10′ 35″ of its course. Besides the double motion of the moon round our earth, and with the earth round the sun, it also revolves on its own axis. It completes a revolution on its own axis in the same time with its revolution round the earth, as appears from its always presenting the same side to the earth. In consequence of this remarkable coincidence, the earth must appear to a spectator on the moon to be always in the zenith. One side of the moon, moreover, never receives the reflection of the sun's rays from the earth, while the other is constantly illuminated by it; both sides, however, are equally illumined by the direct rays of the sun. Some little irregularity has been perceived in the surface of the moon presented to the earth, its spots sometimes appearing more to the north, at others more to the south; a similar variation is perceived east and west. This phenomenon is denominated the *libration* of the moon in latitude and longitude. The causes of both have been discovered. (See *Libration.*) Of all the heavenly bodies, the moon, from its comparative proximity to the earth, is the one of which most is known. That it is an opaque body, receiving its light from the sun, is evident from the phenomena of solar and lunar eclipses, but more particularly from the various phases which it presents. Even the naked eye discovers, on the illuminated surface of the moon, several spots, more or less bright; and a good telescope shows us, in the bright parts on the limits of illumination, prominences and depressions, which are regarded as mountains and valleys. The numerous observations of Herschel and Schroter, through a number of years, have put the existence of these beyond dispute: Schroter has even undertaken to determine the elevation of mountains in the moon. The two heights on the southern limb, which he called *Leibnitz* and *Dorfel*, he measured by means of the shade which they cast, knowing, at the same time, the sun's elevation with regard to them, and found them to be 26,650 feet high; therefore almost as high as the most elevated summits of the Himalaya. The large dark spots appear, when intersected by the frontier line of illumination, always even and without prominences. Hence they are supposed to be plains, consisting of a substance which has comparatively little power of reflecting the sun's rays. That they are seas, is not probable, since Huyghens observed great depressions in them, and Schroter, in several of these depressions, discovered evident traces of various horizontal strata, lying one upon the other, and forming a wall around them. Schroter, who measured several of these depressions, found their diameter to be from thirty feet to more than half a mile; the diameter of one, in fact, was above sixteen miles, and its depth 30,000 fathoms. The number of spots on the moon was formerly considered to be 244. Schroter has increased their number to 6000, and accurately observed and described many of them. There is no appearance of water in the moon. The depressions, with their walls and surrounding mountains, Schroter regards as craters. The large grey spots appear to him regions which have suffered less, and in which, perhaps, some vegetation exists. He has also observed other changes on the moon's surface, which he considered to be of volcanic origin. From all appearances, it would seem that the surface of the moon is still subjected to great revolutions. Perhaps it is still torn open or thrown up in prominences by violent volcanoes and earthquakes in the interior, as may have once been the case with our earth also. Such revolutions have been supposed to afford a means of accounting for the fall of meteoric stones on the surface of our earth, the power of a volcano in the moon being supposed sufficiently great to throw such masses out of the sphere of the moon's attraction into that of the earth. (See *Meteoric Stones*.) The shepherd Endymion, according to Pliny, first observed the course of the moon and its changes. Hence the story of Endymion and Diana. Even the Chaldeans considered the moon as the smallest among the heavenly bodies and the nearest to the earth; they knew that her light was borrowed, fixed her periodical phases with much accuracy, and attributed her eclipses to the shadow of the earth. That the moon was inhabited, was conjectured by Orpheus, or rather by the author of the verses which exist under his name; and Pherecydes of Scyros, a contemporary of Servius Tullius, is said to have determined the time of her revolution. The Pythagoreans affirmed that the moon contained mountains, cities, plants, animals, and men. Anaximander knew the size of the moon, its distance from the earth, and that its light was borrowed from the sun. The spots on its surface Clearchus considered to be seas. In modern times, this planet has occupied much of the attention of astronomers. The question whether the moon has an atmosphere has been settled by Schroter in the affirmative.—See the article on the moon's atmosphere, in the first volume of Gehler's *Physikal. Wörterbuch* (Leipsic, 1825).

Doctor Francis von Paula Gruithuisen, professor of astronomy at Munich, has, of late years, paid great attention to the moon, and his discoveries and hypotheses, though wanting confirmation, have excited much interest. In his opinion, the straight lines, often of considerable length and a parallel direction, which have been observed on its surface, and which are made up of objects resembling, in shape, a star, an inverted Z, &c., are, in fact, roads, with cities, temples, dwellings, &c. At present, however, these conjectures can hardly be regarded as more than creations of a lively imagination. The *Topographie der sichtbaren Mondoberfläche*, by W. G. Lohrmann (Leipsic, 1824, 4to), represents the elevations and colours of the moon's surface with fidelity, and in such a manner as not to be affected by the libration or the different degrees of illumination.—See also Drobisch's *De vera Lunæ Figura*, and his *Symbolæ ad Selenographiam mathematicam* (Leipsic, 1826).

The various appearances which the moon periodically presents in the different parts of its revolution, are termed *phases*, and arise from the different positions which its opaque mass assumes in relation to the sun and the earth. Every one knows that, at a certain period of the moon's revolution, it is invisible; at other times, it appears of a sickle shape, then semicircular, and finally presents a complete circular disk. When the moon is between the sun and the earth (in which case the sun and moon are said to be in conjunction), it presents its unillumined side to us, and we can see nothing of it. In this state it is called the *new moon*. Soon after, it recedes from the sun, and a small part of its illumined surface becomes visible in the evening horizon. Four days after the time of new moon, it has receded 45° from the sun; and now a portion of its illumined surface is seen in the shape of a sickle, with the horns towards the sun. The moon now departs every day farther from the sun, moving in a direction from west to east, and therefore appears every evening nearer the eastern horizon, and the sickle-shaped figure grows daily broader. After about eight days from the time of new moon, it has departed 90° from the sun, and now shows a bright semicircular disk. In this state the almanacs say the moon is in its *first quarter*. Departing continually farther, the illumined portion continually increases, and assumes more and more of a circular figure, until, about fifteen days after the time of new moon, when it stands directly opposite the sun, it presents a complete circular disk. In this state we call it the *full moon*. At this time, it rises when the sun sets, and shines the whole night through. From new moon to full moon, it is said to *wax* (increase). From the day of full moon, it decreases, with each successive day, on the side most distant from the sun, as it is now approaching the sun at the same rate as it before departed. In the course of seven or eight days, it has again arrived within 90° of the sun, and now shows but half its disk on the left side, and is said to be in its *last quarter*. At this time, it rises at midnight. It now shows less and less of its illumined surface, and finally assumes the sickle shape, with the horns, however, turned from the sun; rises later and later, and at the end of about twenty-nine days from the time of new moon again comes into conjunction with the sun, disappears, and commences a new revolution. From full moon to new moon, it is said to *wane*. The moon, when new and full, is said to be in its *syzygies*, and its appearances at the different quarters are called *changes*. As well before as after new moon, the naked eye can discern a pale light on the portion of the disk not illumined by the sun. This is reflected from the earth; for, at the time when it is most perceptible, the sun has not yet set, in the afternoon, and in the forenoon has been up for some time. The inhabitants of the moon, therefore, at such times, see our earth as an illumined disk in the heavens, fourteen times larger than the moon appears to us.

Age of the moon is the number of days since the new moon, which is found by the following rule: To the epact add the number and day of the month, which will be the age required, if less than thirty; and if it exceed thirty, subtract this number from it, and the remainder will be the age. See *Epact*.

Harvest moon is a remarkable phenomenon relating to the rising of this luminary in the harvest season. During the time she is full, and for a few days before and after, in all, about a week, there is less difference in the time of her rising between any two successive nights than when she is full in any other month of the year. By this means she affords an immediate supply of light after sunset, which is very beneficial in gathering in the fruits of the earth; and hence it is, that this lunation has been termed the *harvest moon*. In order to conceive this phenomenon, it must first be considered, that the moon is always opposite to the sun when she is full; that she is full in the signs Pisces and Aries in our harvest months, these being the signs opposite to Virgo and Libra, the signs occupied by the sun about the same season; and because those parts of the ecliptic rise in a shorter space of time than others (as may easily be shown and illustrated by the celestial globe), the moon when she is about her full in harvest, rises with less difference of time, or more immediately after sunset, than when she is full at other seasons of the year.

Moon dial is a dial which shows the hours of the night by the light of the moon.

MOON, MOUNTAINS OF THE, or DONGA MOUNTAINS; a chain of mountains in the central part of Africa, S. E. of Nigritia, which it divides from unknown regions. It is supposed, with much probability, to be connected with the Abyssinian mountains, and was formerly thought to stretch across the continent, and form a junction with the mountains of Kong; but the Niger is now known to flow between them. Travellers have reported that the summits were covered with perpetual snow, which, in that latitude (about 7 or 8° N.), would require an elevation of 14,500 feet. This range was known to the ancients, and is mentioned by Ptolemy, under the name of *mountains of the moon*, which has been retained by the moderns.

MOOR, TO; to confine or secure a ship in a particular station by chains or cables, which are either fastened to the adjacent shore, or to anchors in the bottom. A ship is never said to be moored when she rides by a single anchor.

MOORE, EDWARD, an English poet and dramatic writer of the last century. He was the son of a dissenting clergyman at Abingdon in Berkshire, where he was born in 1712. He was brought up to the business of a linen-draper, which he carried on for some time in the metropolis. In 1744 he published Fables for the Female Sex; and having been noticed by lord Lyttelton, he complimented that nobleman in a poetical piece, entitled The Trial of Selim. His dramatic works are, The Foundling, a comedy, 1748; Gil Blas, another comic drama; and The Gamester, a tragedy, 1753; all acted at Drury-lane theatre. The two former had little success; but the last became a stock piece, and it is perhaps one of the best examples of a domestic tragedy which our literature affords. Mr Moore engaged in conducting a periodical paper, called The World, to which lords Lyttelton, Chesterfield, Bath, and Cork, Mr H. Walpole, R. O. Cambridge, and Soame Jenyns, became contributors. The last number of the World was published on the day of the editor's death, Feb. 17th, 1757. The literary reputation of Moore rests on his tragedy and his fables, the latter of which have less humour and point than those of Gay, and are also inferior to his other compositions, in ease and elegance of style; but they exhibit lessons of morality in pleasing language, and have become deservedly popular.

MOORE, JOHN, a physician, distinguished as a cultivater of polite literature, was the son of an episcopal divine, and born in 1730, at Stirling in North Britain. He became a student at the university of Glasgow, and having obtained a knowledge of medicine and surgery, he went to the Netherlands in 1747, and served as a mate in the military hospitals. Peace taking place, he became household surgeon to the British ambassador at Paris; and afterwards returning to Scotland, he practised as a surgeon till 1772, when he took the degree of M.D. at Glasgow. He was soon after engaged by the duchess of Argyle, as medical attendant to her son, (the late duke of Hamilton,) who was in a delicate state of health, and whom he accompanied to the continent, and spent there five years in travelling. In 1778 he returned to London, and in the following year published A View of Society and Manners in France, Switzerland, and Germany, 2 vols. 8vo, which passed through numerous editions, and has been translated into several foreign languages. In 1781 appeared his View of Society and Manners in Italy, 2 vols.; and in 1785, a volume, entitled Medical Sketches. The next production of his pen, was Zeluco, a novel, containing interesting delineations of Italian character and manners. In 1795, he published A View of the Causes and Progress of the French Revolution, 2 vols. 8vo, describing scenes which he had witnessed during a residence at Paris. The following year he produced a novel, entitled Edward, or various Views of Human Nature; and in 1800, another, called Mordaunt, or Sketches of Life, Character, and Manners in various Countries. He also published a collective edition of the works of his countryman Smollett, with the life of the author. Dr Moore died at Richmond in Surrey, February 20th, 1802.

MOORE, SIR JOHN, a distinguished military commander, was a son of Dr Moore, the subject of the preceding article, and born at Glasgow on the 13th of November, 1761. Being destined for the military profession, he was educated chiefly on the continent; and whilst his father was abroad with the duke of Hamilton, the interest of that nobleman procured him admission to the service, in the capacity of ensign to the 51st regiment of foot. It was at Minorca, in 1776, that Moore first entered the army; a lieutenancy in the 82d regiment was the next step of his promotion, and he seems to have held this station, during the several campaigns of the American war, in which he served till the arrival of peace, when his regiment was reduced in 1783.

A seat in parliament, as member for Lanark and the adjoining burghs, obtained apparently by the influence of the patron above referred to, did not long interrupt his advancement. About the year 1788, the office of major in the 4th battalion of the 60th regiment of foot was exchanged for a similar post in his original regiment, the 51st, and followed by the commission of lieutenant colonel, which he purchased in that corps two years afterwards. From Gibraltar, where his military duties had placed him, he was ordered to Corsica in 1794; and the esteem of General Charles Stuart, formed an epoch in his military life. The siege of Calvi was the scene of this distinction; and his first wound was received in storming the Mozzello fort.

When a disagreement with the Viceroy had produced the recall of general Stuart, Moore succeeded him in the character of adjutant-general; but as the subject of dispute with the viceroy still subsisted, the new commander remained not long in good terms with him. His return to Britain, in the year 1795, seems not to have proceeded from dissatisfaction on the part of government; and his appointment to the rank of brigadier-general in the West Indies, which followed immediately, opened a new and more conspicuous field to his military talents. At Barbadoes, in consequence of his appointment, he met Sir Ralph Abercrombie, commander of the expedition destined to act against St Lucie; and in this hazardous service, of which an important department was assigned to general Moore, he acquitted himself with that steadiness and gallantry which excited the warm applause of his superior officer. The conqueror of St Lucie, who had already designated general Moore as "the admiration of the whole army," committed to him the prosecution of his enterprise, together with the government of the island; and this charge, undertaken with reluctance, and rendered full of danger and labour from the hostility of the natives and the number of Maroon negroes, who constantly infested the country, was managed with a decision and activity that overcame every obstacle. Two successive attacks of the yellow fever soon forced general Moore to leave the West Indies, but, in company with Sir Ralph Abercrombie, he was destined to earn still higher distinction. The first scene in which they again acted together, was the Irish rebellion; and during those unhappy contests, notwithstanding the disorganized state of the army, general Moore's conduct was such as to obtain universal approbation.

After Sir Ralph's expedition to Holland, (1799,) in which general Moore was severely wounded, a wider and more brilliant theatre was soon afterwards presented for their united exertions in the expedition to Egypt. During this celebrated campaign, general Moore fully supported the reputation for bravery and coolness which his former services had acquired. An important charge in disembarking the troops was assigned to him; and the battalion which he led was among the foremost in the far-famed enterprise of storming the French batteries, erected on a neighbouring eminence of sand to oppose their landing. His subsequent efforts ably seconded the commander's arrangements, and contributed materially to the happy issue of their undertaking. That victory which was purchased with the life of Sir Ralph Abercrombie, disabled general Moore for a time from farther exertion: a dangerous wound in his leg confined him first on board one of the transports, and afterwards in the neighbourhood of Rosetta, till the conclusion of the expedition. His merits were rewarded on his return to Britain by the order of knighthood; and public opinion seemed to point him out as a fit person for conducting any military operation in which the country might require his services.

After a few years of repose, general Moore (1808) was called to take upon him the command of an armament which the British government had prepared in aid of the Spanish patriots, now engaged in hostilities with Napoleon. It would take up too much room in this place to relate the particulars of this expedition. It is enough to observe, that after an advance to Salamanca, in which he was chagrined by every species of disappointment, cramped by restrictions, perplexed by misinformation, and after a fruitless attempt to penetrate into Portugal, general Moore commenced a retreat to the coast, conducted it successfully in the face of an enemy greatly superior, and by his masterly dispositions at Corunna, repelled the formidable attack, in which a cannon-ball deprived him of life,—though not till his last moments were consoled by intelligence that victory had secured a safe embarkation for his troops. He died with the equanimity which became him, on the 16th of Jan., 1809. His death excited a great sensation throughout the country. The house of commons ordered a monument to be erected for him in St Paul's cathedral, and his native city, Glasgow, also erected one to his memory. The extent of his merits as a military commander, has been a subject of much controversy, but all, except those blinded by party zeal, allow, that in proportion to the means intrusted to him, they were very great.

MOORISH ARCHITECTURE. See *Architecture*.

MOORS; a class of the inhabitants of Western Africa, particularly of the states of Fez and Morocco. The Arabians call them *medainien* (mariners); they call themselves *Moslem* (the faithful), and are strict Mohammedans. They are of Arabian origin; they live in towns, and are employed principally in traffic. The Romans called a part of Western Africa *Mauritania*, and the inhabitants *Moors*. Their wars with the Romans are well known. This territory was afterwards under the dominion of the Vandals, whose king Genseric (429) established a powerful kingdom, which was, however, overthrown (534) by Belisarius. The Saracens (Arabians), followers of Mohammed, extended their conquests in the seventh century to this part of Africa, which was governed by a deputy of the caliph of Damascus. Subsequently (711—13) they took advantage of the disorders in the Spanish kingdom of the Visigoths to reduce that country, with the exception of a small part, under their yoke. The Spanish writers gave them the name of *Moors* from their residence in Mauritania. While the greatest part of Europe was sunk in barbarism, learning and the arts flourished among the Arabians in Spain, where remarkable monuments of their labours are still seen; but the division of the country among different rulers, and their dissensions, so weakened the power of the Moors, that they could no longer resist the incessant encroachments of the princes of the newly established Christian states in Spain, and were finally reduced to the possession of the kingdom of Grenada. Ferdinand the Catholic, after a ten years' war (1491), conquered this also, and thereby put an end to the dominion of the Moors in Spain, after it had lasted nearly 800 years. A part of the Moors went to Africa; most of them remained in Spain, where they were industrious, peaceful subjects, and adopted generally the external forms of Christianity. These last were called, in Spain, *Moriscos*. Philip II., in his ferocious zeal for Christianity, resolved upon their entire destruction. His oppressions and persecutions excited an insurrection of the Moriscos in Grenada (1571), after the suppression of which, above 100,000 of them were banished. Philip III., in the same spirit of fanaticism, completed their expulsion from the country. Nearly a million of the Moriscos emigrated to Africa. As they were the most ingenious and industrious inhabitants of Spain, they were a great loss to the country. Agriculture speedily fell into decay. This expulsion of the Moriscos is regarded as one of the leading causes of the decline of Spain. The History of the Reign of the Moors in Spain, by doctor Jos. Ant. Conde, is drawn from Arabian manuscripts.

MOOSE. See *Deer*.

MORA; a game known even among the ancients, and at present much in vogue in the south of Europe. It is played by two persons. Both present, at the same time, one hand, of which some fingers are extended, or all, or none. At the same moment each of the parties calls out a number. If the number pronounced by one of the players agrees with the number of the fingers stretched out by both, he who pronounced it counts one, and lifts one finger of the unemployed hand. He who first succeeds in opening all the fingers of this hand, wins the game. It is generally played to determine who is to pay for the wine, and the like. A person unacquainted with the game finds it difficult to conceive how it can be interesting; yet you see it played with the greatest animation everywhere in Italy.

MORALES, Louis de, commonly called *el Divino*, from his having painted nothing but sacred subjects, was born at Badajoz, in 1509. His pencil is bold, his touch vigorous, yet delicate, and his pictures all have life and action. They are generally of a small size, and commonly on copper. He painted hair with peculiar excellence. Morales visited all the cities of

Spain which contained any *chef d'œuvre*, and, by this indiscriminate study of different masters, acquired remarkable originality of manner. He died at Badajoz, in 1586. His works are scattered through Spain. The picture of St Veronica, in the church of the barefooted Trinitarians, at Madrid, is his master-piece.

MORALITY; a sort of allegorical play, so termed because it consisted of moral discourses in praise of virtue and condemnation of vice. It succeeded the Mysteries. The dialogues were carried on by such characters as Good Doctrine, Charity, Faith, Prudence, Discretion, Death, &c., whose discourses were of a serious cast; while the province of making merriment for the spectators descended from the Devil in the Mystery to the Vice or Iniquity of the Morality, who usually personified some bad quality, and whose successor we find in the clown or fool of the regular English drama. (See *France, Literature of*, division *Drama*.) Moralities were occasionally exhibited as late as the reign of Henry VIII., and, after various modifications, assumed the form of the Mask, which became a favourite entertainment at the court of Elizabeth and her successor. See *Drama*.

MORAL PHILOSOPHY is the science which treats of the motives and rules of human actions, and of the ends to which they ought to be directed. The moral law is the law which governs intelligent and free beings, and which determines the character of vice and virtue. It is a natural law, independent of any human institution; a religious law, which emanates from the supreme Legislator, obligatory in itself, through the conviction which it produces, universal and immutable. The moral law revealed itself in the infancy of society. Philosophers are its expounders, not its creators. Their voice is but the echo of conscience. The first moralists confined themselves to expressing the law of duty in maxims, or to illustrating it in apologues. It needed no proof beyond a mere enunciation. Their simple precepts have been honoured in all ages. Three chief causes have concurred in developing and establishing the rules of practical morality,—positive laws, religious institutions, and civilization. Positive laws are only the written expression of the law of duty engraved in the human soul, with such provisions as the violence of the human passions requires to enforce its precepts. Legislators, it is true, have had in view rather the general interests of society than the interest of morality in the abstract; their punishments are proportioned to effects rather than intentions. But the common good is usually found to accord with individual duty; and men require, in the provisions for the public weal, an acknowledgment of the moral law. They require to be addressed in the name of justice.

While civil institutions have regulated the conduct of man in society, religious institutions have penetrated into the sanctuary of conscience. Moral and religious sentiments are developed almost spontaneously, and have a natural sympathy. From its alliance with morality, religion becomes refined and elevated. Christianity has blended them in the precepts of love to God and love to man.

What we call *civilization*, is a complex result which supposes the existence of close, extended, and varied relations among men, the development of industry, the progress of intelligence and taste, the establishment of general order, the refinement of public and private manners. It is, in part, the fruit of civil and religious institutions. Practical morality exerts a powerful influence on it, strengthening the ties which unite individuals, fortifying the respect for equity and benevolence, encouraging labour, and assuring its reward by protecting property, favouring the progress of intelligence by nourishing the love of truth, and improving taste by purifying and elevating the sentiment of the beautiful. Civilization, in its turn, promotes practical morality. The closer and more varied the relations among men become, the more sensible do they grow to their mutual duties. Labour gives man the sentiment of self-respect; the progress of science and the arts aids virtue, by enlightening the mind, and accustoming it to noble and delicate pleasures. If such are the influences of laws, religion, and civilization upon morality, we need not be surprised that they have, in turn, been considered its source, from a limited view of its nature. But if the moral law is, in reality, prior to all these, why, it may be asked, does it appear to vary so much in its effects in different places and ages? To this we reply, that practical morality supposes two conditions—the idea of duty faithfully comprehended, and the authority of duty strongly felt. But the idea may be partially or erroneously understood, and the sentiment may be blunted or weakened. The law of duty, in the abstract, is simple, and not liable to be mistaken; but its applications are often complex and delicate, requiring the exercise of a strong and cultivated reason, and therefore affording great occasion for mistake. The feeling of duty, too, requires a certain degree of reflection, and becomes extinct in a life of violence and sensual excess. It may, moreover, become perverted in consequence of positive ordinances, civil and religious. But the very abuse of the notion of duty supposes its existence; and we find not a few instances in which the native energy of the moral feeling has risen superior to positive institutions, and wrought fundamental changes in the laws, religions and other institutions, which had sought to enchain it. We might add, that the doctrines of philosophy have often been much more the effect of the manners of a particular country or age than the agents which modified them.

Moral precepts may be distinguished into two orders, with reference to the degree of obligation which they impose—the imperative and the meritorious. The first commands us to render to every man his due, including, of course, our duties to ourselves; the second, to do for every man, ourselves included, all which is in our power, and therefore to strive for our own highest improvement. But the limits of these two classes cannot be distinctly defined. In considering what the moral law enjoins, we soon perceive that there are degrees in our duties. Just as actions may differ in criminality, so may they also differ in merit; and the degree in both cases will depend upon accompanying circumstances; and circumstances are often such as to make it difficult to determine on which side the balance of duty predominates. But though man is often driven to choose between conflicting duties, he is never obliged to choose between two criminal acts; although, in some cases an act of guilt will present itself under the specious guise of a means for a good end; which has led some speculators to the revolting doctrine, that the end justifies the means—a doctrine sufficient to excuse the wildest excesses of fanaticism, which, in its blind zeal to effect what it deems a laudable object, tramples under foot the most sacred rights. When we inquire what gives a moral character to actions, we learn that it is the intention. A man's acts may, however, be sinful, although his intention at the time may not have been bad, if they originated in prejudice or ignorance, occasioned by a sinful neglect of the means of information. Proper instruction in moral duties is therefore every man's highest interest and highest duty.

Moral duties have been distinguished into three great classes—duties to God, to our fellow-men, and to ourselves—but, though they may be classified, they are not to be separated. Duties to God comprise, essentially, all our obligations; and when we serve other men, we, in fact, labour for ourselves; so, too, in improving ourselves, we are qualifying ourselves to render the highest service to others. The class of mutual duties which supports the social relations may be divided into three branches—the duties of the individual to society, those of society to the individual, and those of societies to each other. Under the name of *societies,* we include all the forms and degrees of human association—the family, city, country, and mankind. The duties of the individual towards society differ with the station which he occupies, and the nature of social institutions. The duties of the private man, the magistrate, and the statesman, are very various. Free institutions, as they greatly increase the sphere of efficiency, proportionably enlarge that of duty; and the rapid growth of such institutions, in our day, must give rise to new classes of social duties. Perhaps a wide field still remains open to moralists, in the exposition of the duties which society owes to its members. Some philosophers have been so blind to these as to maintain that the public interest would justify the sacrifice of an innocent individual. And how long have mankind been in learning the respect which they owe to the individual liberty of thinking, speaking, and writing? Is this respect properly understood, even at present? Have politicians duly learned the regard which they owe to the moral law? Is it a long period since the writers on general law have considered with proper attention the rules which society ought to impose on itself in the application of punishments? But it is the relations of societies towards each other which principally demand the meditations of moralists. There is a social selfishness which meets a ready excuse, since each member of a society is apt to consider his individual character merged in his social, and that his duties towards the association with which he is connected, justify acts and feelings which would be censurable in his commerce with others in his individual capacity. Hence that *esprit de corps*, so bitter in its animosities, and so unscrupulous in its ambition, arming nation against nation, from commercial rivalry or lust of territorial aggrandizement, from wounded pride or thirst of conquest. The code of international law is yet very imperfect, and needs to be completed by reference to the code of morality.—See Paley's *Principles of Moral and Political Philosophy;* Adam Smith's *Theory of Moral Sentiments;* Dugald Stewart's *Philosophy of the active and moral Powers of Man;* Degerando's *Perfectionnement Moral;* Mackintosh's *History of the Progress of Ethical and Political Science* (London, 1830.)

We shall now say a few words on the different theories of moral sentiments. Philosophers have endeavoured to establish some general principle from which the laws of practical morality may be derived, and to which, in doubtful points, we may refer, to determine our rule of conduct in particular cases. The Hindoo moralists find their moral principle in the precept to purify the soul from all sensual desires. Plato, who drew from Eastern fountains, expresses his law of morality under three different forms—Strive to resemble the Deity. Let your passions be in harmony with each other. Live in accordance with the fundamental type of the soul, or inborn ideas (or, according to the Stoics, with nature). Aristotle considered virtue and prudence as the same, and recommended the golden mean, or a rational avoidance of extremes; virtue, according to him, consists in the habit of mediocrity according to right reason. Epicurus (who did not, however, understand his precept in the low sense usually ascribed to it) founded his moral system on the rule, Live to enjoy thyself; which has been considered to refer to the happiness which virtue gives; and it is certain that Epicurus himself was a model of virtue. The new Platonists followed their master on this point. The fathers of the church did not attempt to establish any universal moral principle; nor did the Scholastics. The British moralists have founded their systems on different principles; Hutcheson's rests upon the principle of benevolence, and assumes a moral sense; Ferguson followed the Epicurean theory; Samuel Clarke places virtue in acting according to the nature of things, by which man will facilitate his progress to his destined sphere. Adam Smith assumes sympathy as the moral principle; Wollaston, the acting according to the truth of things; lord Shaftesbury, the maintenance of a proper balance of the affections. Paley's system is founded on utility. Cudworth considers virtue as an innate principle. Of the continental moralists, Grotius and Puffendorf derive all duties from the fundamental obligation to improve the condition of others and of one's self, and therefore command us to endeavour to do all in our power to promote the general good. The precept of Crusius, who considers duty an obligation to God rather than to man, is, Obey all the precepts of God. Thomasius, Leibnitz, and Wolf give, as their fundamental principle, Aim at perfection; Kant, Be thy own lawgiver, and strive less for dominion over others than over thyself. In all theories of morals, two questions arise—What is virtue? How is it recommended to us? And all theories on each point may finally be reduced to three; on the first, that virtue is benevolence, or prudence, or propriety; and on the second, that it is recommended to us by self-love, or reason, or a moral sense.

MORAT (*Murten;* Latin, *Muratum*); a town in the Swiss canton of Friburg, on the lake of Morat (Murtensee), fourteen miles west of Berne. It derives its celebrity from the battle fought here between the soldiers of the Swiss confederacy and Charles the Bold, duke of Burgundy, in 1476. After the loss of the battle of Granson (March 3), the fiery duke collected a new army of 40,000 men, and presented himself (June 10) before the gates of Morat. To the aid of the Swiss came their allies, the Rhenish cities, and René, the young duke of Lorraine, who had been driven from his estates by Charles, was with them, but not, as some have said, in the command. Their forces were much inferior to those of the duke; but, having reconnoitred the position of the enemy, they attacked him, drove in the out-posts, entered the camp with the fugitives, and, being joined by the garrison of Morat, gained a complete victory, making themselves masters of the hostile camp, artillery, and baggage. Charles himself escaped merely by the speed of his horse, and accompanied by only twelve horsemen, fled to Soigne, a town of Champagne, seventy miles from Morat. The remains of the killed (15,000) were thrown into a large pit, and covered with lime and earth. A large building was afterwards erected, in which they were collected, and which bore the inscription, *D. O. M. Caroli inclyti et fortissimi Burgundiæ Ducis Exercitus, Muratum obsidens ab Helvetiis cæsus hoc Sui Monumentum reliquit. Anno* 1476. And beneath were these words:—

Dies Gebein ist der Burgundischen Schar,
Im vierzehnhundert siebzig und sechsten Jahr,
Vor Murten durch ein Eidgenossschaft
Erlegt mit Beistand Gottes Kraft.
Auf der zehntausend Rittern Tag
Geschah dies grosse Niederlag.

This monument was destroyed by the French army in 1798, and a lime-tree, surrounded with a fence, planted in its place. In 1822, the Swiss confederacy erected an obelisk on the spot, as a national memorial of the battle.

MORAVIA (in German, *Mähren*) ; a margraviate and province of the Austrian empire. The margraviate (8862 square miles) borders on the Prussian county of Glatz and Austrian Silesia to the north, on Hungary to the east, on Lower Austria to the south, and on Bohemia to the west. The province includes also Austrian Silesia (1850 square miles), and contains a population of 1,990,464 inhabitants, of whom about 430,000 are Germans, 30,000 Jews, 900 Bohemians, and the rest Sclavonians. It is watered by many rivers, of which only the Marsch or March is navigable for a short distance: on the north, east, and west, it is enclosed by mountains, which are to be considered as continuations of the Sudetic and Carpathian chains, and is open only to the south. To the north, on the borders of Glatz, lies the Schneegebirge, the highest summit of which is the Schneeberg, about 4500 feet high. In general, the loftiest mountains are in the northern part, from which the elevation gradually diminishes towards the south. There are also ridges of hills in the interior, interspersed with fine plains and valleys. The mountainous districts are not fertile ; but in the Hanna (land of the Hannaks) and in the southern part, the soil is uncommonly rich. The breeding of cattle, although favoured by rich meadows and pastures, is less attended to than tillage. Great numbers of poultry, particularly geese, are raised. The fisheries are productive. The principal corn districts are in the Hanna, on the March, about Brunn, and in the south-eastern parts of the circle of Znaym. Flax, hemp, fruits, garden vegetables, &c., and in some parts wine, are produced in abundance. Silver and gold were formerly found ; iron, sulphur, coal, and alum are the chief mineral products. Woollen and linen manufactures, the latter employing 200,000 spinners and 13,000 weavers, and the former 100,000 workmen and 10,000 looms, and also cotton manufactures, are carried on to a considerable extent. The transit trade of the province, favoured by good roads, is important. The government of Moravia is almost entirely absolute, although it has estates, composed of the prelates, the lords, knights, and royal burgesses. The administration of the affairs of the province is in the hands of a provincial government at Brunn, to which the six Moravian circles (Olmutz, Brunn, Iglau, Znaym, Hradisch and Prerau), and the two Silesian circles (Troppau and Teschen), are subordinate. The (Catholic) bishops of Brunn and Olmutz are at the head of ecclesiastical affairs. The revenue is about 6,000,000 guilders. Brunn is the capital. The Sclavonic population consists of several tribes, which differ in habits and language, and are in a rude state. Among these are the Slowaks (distinguished for wit, eloquence, and taste for the arts and sciences), and the Hannaks (distinguished for hospitality). Previously to the fifteenth century, they professed the Greek religion ; the Hussites were then numerous, and, in the sixteenth century, the reformation had many adherents ; the Catholics, however, are the most numerous, their number being 1,800,000. This country was anciently the land of the Quadi, and was occupied, after their emigration to Spain, by the Scyri, the Rugii, the Heruli, and, until 548, by the Lombards, when it was entered by a colony of Sclavonians from the Danube, who were driven from their former seats by the Walachians (Bulgarians), and were called *Moravians* from the river *Morava*. After the fall of the kingdom of the Avars, the Moravian Sclavonians extended their limits, and finally founded the kingdom of Great Moravia, which comprehended several other countries beside the present Moravia. Charlemagne subdued the Moravians, and compelled their king Samoslay to be baptized ; Cyrillus (856), however, was the true apostle of Moravia. Arnolph at first enlarged the Moravian state, by granting to Swatopulsk, or Zuatoblick, Bohemia and other countries on the one side to the Oder on the other, towards Hungary as far as the Gran. Swatopulsk afterwards revolted ; but Arnolph attacked him, with the aid of the Bohemians and Hungarians, and so enfeebled the kingdom, that, under his successor, it was completely overthrown. From that time Moravia became the prey of the Hungarians, Poles, and Germans. In the eleventh century, it was reduced to about its present extent, and formed a part of the Bohemian territories. In 1085, it was made a margraviate, and (until 1611, when it was, for a time, attached to the Hungarian dominions) granted by the Bohemian kings, from time to time, as a fief to their sons or relations. See *Bohemia*.

MORAVIANS, or HERRNHUTERS. See *United Brethren*, and *Bohemian Brethren*.

MORAY, or MURRAY, PROVINCE OF, an ancient territorial district on the east side of the northern division of Scotland, which in modern times comprehends the three several shires of Banff, Moray, or Elgin, and Nairn. It is famed for the fertility of its soil, and the salubrity of its climate, and was at one time reckoned the "granary of Scotland." It gives the title of earl to a branch of the Stuart family.

MORAYSHIRE, or ELGINSHIRE, the central division of the above-mentioned province, is bounded on the north by the Moray Firth, on the east and south-east by Banffshire, on the south and south-west by Inverness-shire, and on the west by Nairnshire and Inverness-shire. It lies between the 57° and 58° of north latitude ; and the longitude at the mouth of the Spey is 3° 6′ West, extending in length from east to west 42 miles, and in breadth 20 miles.

The county of Moray is naturally divided into the upper and champaign districts. 1st, The low country is a large plain, bounded by the Firth of Moray on the north, and a winding range of mountains on the south, whose length equals that of the whole county, and its breadth, measured at right angles from the mountains to the shore, is from five to twelve miles, or mean breadth seven miles. The surface of the low lands is diversified by intervening hills, disposed in short ridges parallel to the Firth, and intersected by the rivers Spey, Lossy, and Findhorn, whose streams wind, at unequal distances, across the plain into the sea. Many of the plains along the banks of the Spey and the Findhorn are remarkable for their beauty and fertility. One-third of the bottoms and sides of the valleys within the range of the mountainous or hilly district, except certain parts adapted for bearing trees, is capable of cultivation. The width and depth of these valleys are proportionate to the largeness of the rivers, and the friability of the soil through which they flow. The climate is so mild, that the apricot, nectarine, and peach ripen sufficiently on a wall in the open air, and gardens are formed.

Morayshire contains two royal burghs, Elgin and Forres, and several considerable towns, as Grantown, Garmouth, and Lossie-mouth. The principal noblemen and gentlemen's seats are Gordon Castle and Castle Grant. Population of the county in 1821, 31,162 ; in 1831, 34,231.

MORBIHAN ; a department of France, in the old province of Bretagne, lying on a gulf from which it has received its name. Chief place, Vannes. See *Department*.

MORBUS ; a Latin term signifying *disease*, and often used in medicine.

MORDANTS. The colouring substances used in dyeing have been divided by doctor Bancroft into *substantive* and *adjective* colours. *Substantive* colours are those which communicate their tint immediately to the material to be dyed, without the aid of any third substance. *Adjective* colours require the intervention of a third substance, which possesses a joint attraction for the colouring matter and the stuff to be dyed. The substance capable of thus fixing the colour is called a *mordant*, and by Mr Henry, a *basis*.

MORDAUNT, CHARLES. See *Peterborough, Earl of.*

MORE; the final syllable of a number of Irish geographical names, signifying, in the language of the country, *mountain*.

MORE, HANNAH; an eminent moral writer, was born at Stapleton, in Gloucester, in 1744. She was one of the five daughters of a village schoolmaster, whose means were not sufficient to give his children many of the advantages of education; but this deficiency was supplied by their own talents and perseverance. The literary abilities of Hannah early attracted notice, and a subscription was formed for establishing her and her sisters in a school of their own. Her first literary production, The Search after Happiness, a pastoral drama, was written when she was only eighteen years of age, though not published till 1773. By the encouragement of Mr Garrick, she tried her strength in tragic composition, and wrote The Inflexible Captive, a Tragedy, which was printed in 1764. Her tragedy of Percy, the most popular of her dramatic compositions, was brought out in 1778, and ran fourteen nights successively; and her last tragedy, The Fatal Falsehood, was produced in 1779. Shortly after, her opinions on public theatres underwent a change, and, as she has stated in the preface to the third volume of her works, "she did not consider the stage, in its present state, as becoming the appearance or countenance of a Christian." "Early in life she attracted general notice by a brilliant display of literary talent, and was honoured by the intimate acquaintance of Johnson and Burke, of Reynolds and Garrick, and of many other highly eminent individuals, who equally appreciated her amiable qualities, and her superior intellect. But she quitted, in the prime of her days, the bright circles of fashion and literature, and, retiring into the neighbourhood of Bristol, devoted herself to a life of active Christian benevolence, and to the composition of various works, having for their object the religious improvement of mankind. Her first prose publication was Thoughts on the Manners of the Great, printed in 1788; followed in 1791, by her Estimate of the Religion of the Fashionable World. In 1795, she commenced at Bath, in monthly numbers, The Cheap Repository, a series of admirable tales for the common people, one of which is the well-known Shepherd of Salisbury Plain. The success of this seasonable publication was extraordinary; and within a year the sale reached the number of 1,000,000 copies. Her Strictures on the Modern System of Female Education, appeared in 1799; Hints towards Forming the Character of a Young Princess, in 1805; Cœlebs in Search of a Wife, in 1809, (which passed through at least six editions in less than a year;) Practical Piety, in 1811; Christian Morals, in 1812; Essay on the Character and Writings of St Paul, in 1815; and Moral Sketches of the Prevailing Opinions and Manners, Foreign and Domestic, with Reflections on Prayer. The collection of her works comprises 11 volumes 8vo.

Near the beginning of the present century, Mrs More left Bath, and retired to Barley Wood, a cottage delightfully situated in the village of Wrington, the native place of John Locke. In 1819, she lost her last surviving sister Martha, and under this bereavement, and being now confined to her room, she quitted Barley Wood for Clifton, where, and at Bristol, she had some valuable friends, though not a single relation of whom she had any knowledge in the world. She died at Clifton in September, 1833. She is said to have realized upwards of £30,000 by her writings; and her charitable bequests exceeded £10,000.

MORE, HENRY, a celebrated divine of the church of England, and Platonic philosopher, was born in 1614. He was the son of a gentleman of good estate, who educated him at Eton, whence he was sent to Christ's college, Cambridge, in 1631. While at the university, he deeply studied the most celebrated systems of philosophy, and finally settled into a decided preference for that of Plato, and for his followers of the school of Alexandria. In 1639, he graduated M. A., and in the following year published his *Psycho-Zoia*, or the First Part of the Song of the Soul, containing a Christiano-Platonical Display of Life. Having been elected a fellow of his college, he became a tutor to several persons of rank. One of these was Sir John Finch, whose sister, lady Conway, an enthusiast of his own stamp, brought him acquainted with the famous Van Helmont, and that singular pretender, Valentine Greatrakes. In 1675, he accepted a prebend in the church of Gloucester, which it is supposed he took only to resign it to his friend doctor Fowler. He also gave up his rectory of Ingolsby, in Lincolnshire, the perpetual advowson of which had been purchased for him by his father, and would never afterwards accept of preferment of any kind, refusing deaneries, bishoprics, and even the mastership of his own college, so desirous was he of unmolested study. During the civil war, although he refused to take the covenant, he was left unmolested. In 1661, he became a fellow of the royal society, and for twenty years after the restoration, his writings are said to have sold better than any other of their day. Doctor More died in September, 1687, aged seventy-three, leaving behind him the character of a man of profound learning and great genius, alloyed by a deep tincture of enthusiasm, chiefly coloured by the supposition that divine knowledge had been communicated to Pythagoras by the Hebrews, and from him to Plato. He was also persuaded that supernatural communications were made to him by God's appointment, by a particular genius, like that of Socrates. The writings of this singular, but amiable man, who was beloved by all parties, have been published in two volumes, folio. The most admired are his *Enchiridion Ethicum*, and Divine Dialogues, concerning the attributes and providence of God. See Ward's *Life of Doctor More*.

MORE, Sir THOMAS, a celebrated chancellor of England, was the only son of Sir John More, one of the judges of the court of King's bench, and was born in London, in 1480. He received his early education from a schoolmaster of great reputation in Threadneedle street, and was afterwards placed in the family of cardinal Morton, archbishop of Canterbury, and chancellor, who prophesied his future eminence. In 1497, he went to Canterbury college, now Christ-church, Oxford, and, in 1499, became a student in Lincoln's Inn. At the age of twenty-one, he obtained a seat in parliament, and distinguished himself with so much spirit in opposition to a subsidy, demanded by Henry VII., that the exasperated and avaricious monarch, in revenge, contrived a quarrel with his father, whom he imprisoned until he had exacted an arbitrary fine. After being admitted to the bar, he was appointed law reader of Furnival's Inn, applied assiduously to the practice of law, and enjoyed great reputation as a pleader. In 1516, he accompanied the commissioners sent to renew the alliance between Henry VIII. and Charles, then archduke of Austria, and showed so much ability, that the king was desirous of engaging him in his particular service. In 1518, he published his celebrated political romance of Utopia, which engaged him in a correspondence with Erasmus, with whom he had previously contracted an intimacy while in England; as well as with several other eminent men of letters. Cardinal Wolsey pressed him to receive a pension, which he refused, as inconsistent with his official duties; but after a while he was induced to accept the place of master of requests. He was shortly after knighted, and taken into the privy council; and, the king becoming delighted with his conversation, he was received into the highest degree of familiarity. In 1520, he was appointed treasurer of the exchequer, and, in 1523, at the instance of Wolsey, elected speaker of the house of commons, in which capacity, having done much to frustrate an oppressive subsidy, he highly exasperated the cardinal. If he gave any personal offence to the court by this conduct, it was not of long duration, as, in 1527, he was joined with Wolsey in a mission to France, and on his return was made chancellor of the duchy of Lancaster. In 1530, he succeeded the disgraced cardinal as lord high chancellor, which office he filled three years with scrupulous integrity. Unable to acquiesce in the king's wishes respecting his divorce from Catharine of Arragon, he obtained permission to resign the seals. The affront rankled in the vindictive mind of Henry, which was still further inflamed by his refusal to attend the coronation of Anne Boleyn. An attempt was made to implicate him in the practices of Elizabeth Barton, which altogether failed; and he also perfectly cleared himself of another singular charge, which was that of inducing the king to publish the book against Luther, in which the pope's authority was held forth—a doctrine that was now found inconsistent with the intended attack on the Roman see. At length the oath of supremacy being required by act of parliament, Sir Thomas More was cited before the council to take it; and in spite of all the sophistry of Cranmer and others to induce him to compliance, he nobly persisted in a refusal to act in opposition to the dictates of his conscience, and was consequently committed to the Tower, and indicted for treason. After an imprisonment of twelve months, during which time he resisted all attempts, both public and private, to induce him to retract, he was brought to trial, and, after an eloquent defence, condemned, and sentenced to be hanged and quartered. He received this barbarous sentence with his usual composure, which was disturbed only by the circumstance of a singularly affecting interview with his favourite daughter, Mrs Roper, on his return to the Tower. The king changed the sentence from hanging and quartering to beheading; which act of grace he received with his usual vein of humour, and also acquiesced in the tyrannical mandate, "that he should not use many words at the scaffold." His execution took place July 6, 1535, when he deported himself with a degree of good humour, which, in another sort of man, might be termed levity, but which Addison attributes to the satisfaction arising from conscious integrity, and lord Byron, to a species of temperament too strong even for the control of circumstance, and which conceals a sense of misery without destroying it. Thus died Sir Thomas More, at the age of fifty-five, than whom a character of more disinterestedness and integrity is scarcely to be met with in either ancient or modern history. His learning was various and extensive, his wit abundant, and his elocution ready and agreeable. Except his intolerance towards those whom he considered heretics indeed, the qualities of his mind were most happily blended and tempered. His English works were published collectively by order of queen Mary, in 1557, and his Latin in 1567, at Basle. His Utopia has been translated by bishop Burnet and doctor Warner. See the life of More by Sir James Mackintosh in Lardner's Cabinet Cyclopædia. By his first wife Sir Thomas More had three daughters and one son.—*Margaret*, his eldest and favourite daughter, married William Roper, Esq. of Eltham, in Kent, who wrote the life of his father-in-law, published in 1716. She was mistress of the Greek and Latin languages, and composed with elegance both in English and Latin. Her reverence and affection for her father were unbounded. After his head had been exposed fourteen days on London bridge, she contrived to obtain it, and carefully preserved it; and when she died, it was, at her dying request, buried in her arms.

MOREA (Μωρέας); the modern name of the Peloponnesus (q. v.); a peninsula forming the southern part of Greece, between lat. 36° 23′ and 38° 20′ N., and lon. 21° 5′ and 23° 30′ E. It is connected by the isthmus of Corinth with Continental Greece, or Livadia, from which it is separated in other parts by the gulf of Lepanto or Corinth and the gulf of Athens. To the south-west, it is washed by the Ionian sea, to the east by the archipelago. It is about 160 miles in length and breadth, with a superficial area of 7225 miles. The population of the ancient Peloponnesus has often been estimated at 2,000,000, but it probably never amounted to half that number. Before the late revolution, the Morea contained, according to Soutzo, the Greek historian, 460,000 inhabitants, of whom 50,000 were Turks; at present they do not exceed 280,000. The coast is much indented, forming on the south the gulfs of Kolokythia or Laconia, and the gulf of Coron or Messenia, and on the east, the gulf of Argos or Nauplia. The surface of the country is, in general, mountainous; the northern half, however, presents a fruitful plain, intersected, in some parts, by the Cyllenian mountains. The most southern promontory, Maina, is separated from the rest of the peninsula by the different branches of the Taygetus. The rivers are numerous, but not large; the principal are the Alpheus and the Eurotas. The climate is mild, though less so than formerly, on account of the destruction of the forests. The spring and autumn are delightful, but the summer is hot, and the winter is attended with frequent storms and rain; the soil is fruitful, producing corn, wine, oil, and fruits, honey, figs, silk, and cotton. The chief article of export is the small raisins, called *currants*, from the city of Corinth. The long oppression of the Turks discouraged the progress of the mechanical arts, and the devastations of the Greek revolution swept away almost every establishment for manufactures. Excellent ports, such as Navarino and Napoli di Romania, will facilitate the commerce of the country. The population is at present almost entirely composed of Greeks; they are vigorous, well made, active, and intelligent, but cunning, artful, inconstant, and superstitious. Under the Turkish dominion, the Morea was divided into two sangiacks, that of Morea or Tripolitza, and that of Mistra or Misitra. Since the liberation of Greece, it has been divided into seven provinces, in which, as also in respect to other places, the Greeks have attempted to revive the ancient names. They are Argolis, Achaia, Elis, Arcadia, Upper Messenia, Lower Messenia, and Laconia. Formerly adorned with a hundred cities, it now hardly contains any thing that deserves the name. Tripolitza, Coron, Modon, Misitra, Calamata, Arcadia, Napoli di Romania, Monembasia, Argo, and Patras, are the principal. Among the ruins of the ancient cities, those of Sparta, Mycenæ, and Mantinea are the most interesting. The ancient history of the peninsula is given in the article *Peloponnesus;* the modern history, in the article *Greece, Revolution of.* On the division of the Roman empire, Greece formed a part of the Eastern empire, and the Morea was taken possession of by the Venetians, at the time of the decline of that empire. In the middle of the fifteenth century, the Turks wrested almost the whole of the peninsula from the Venetian republic. Towards the end of the seventeenth century, it was again recovered by Venice, and ceded to it by the peace of Carlowitz, in 1699. It was restored to Turkey in 1715. In 1770, Russia excited an insurrection among the Moreots, which was suppressed, and followed by the execution of a great number of the insurgents. Besides the works referred to, in the article on the revolution of Greece, particularly Pouqueville's and Anderson's works, the reader may consult Trant's *Greece,* in 1830, and Leake's *Travels in the Morea* (3 vols., 8vo, 1830).

MOREAU, JEAN MICHEL, the younger, born at Paris, 1741, a scholar of Lelorrain, accompanied the latter to St Petersburg, when he was chosen director of the academy of arts in that city. Moreau went with him as assistant, though he was then but seventeen. Two years after this, Lelorrain died, and Moreau returned to Paris. Being entirely without means, he abandoned painting, and, under Lebas, devoted himself to the study of engraving; and, as he drew with skill, he prepared the designs for his plates himself. Moreau quickly established his fame. He prepared engravings for the works of Homer, Thucydides, Marcus Aurelius, Virgil, Juvenal, Ovid, Corneille, Racine, Lafontaine, Regnard, Crébillon, Rousseau, Montesquieu, Marmontel, Raynal, Mably, Gresset, Barthélemy, Saint-Pierre, Voltaire, and Molière, to each of the two latter two different series of engravings (making, together, more than 100 plates); also sixty plates for Gessner's writings, eighty for the New Testament, and 160 for the History of France. The great variety of these subjects prove his extensive information; and Moreau might be considered as a living encyclopædia of arts. In 1770, he was commissioned to prepare all the drawings required for the public festivities, and those of the court; and he commenced his duties with the sketches for the celebration of the nuptials of the dauphin and the other royal princes. In 1775, he published engravings, executed by himself, of his drawings for the coronation of Louis XVI., and was made member of the academy of painting, and draughtsman of the royal cabinet. His activity is shown by the number of his productions; for, besides what he completed as royal draughtsman, the number of drawings which he executed for engravings amounts to 2400. In 1784, he made a visit to Italy, which forms an epoch in his opinions and productions. All his works, after that period, are freer and nobler. As late as 1810, he enriched the exhibition of works of art with two drawings, each of which contained more than 300 figures. His disinterestedness prevented him from accumulating property. He died at Paris, 1814.

MOREAU, JEAN VICTOR, one of the oldest and most celebrated generals of the French republic, was born at Morlaix, in Bretagne, in 1763. His father destined him for the law; but, led by his decided predilection for the military profession, he fled from his studies, and enlisted in a regiment, before he had attained his eighteenth year. He was not, however, suffered to indulge his ruling passion, but was obliged to apply himself anew to the study of law at Rennes, of which school he became provost. When the revolution broke out, he had acquired considerable reputation; and, in 1789, a general confederacy of the Bretons being formed at Poictiers, he was chosen its president, and also became commander of the first battalion of volunteers, raised in the department of Morbihan, at the head of which he joined the army of the north. He subsequently favoured the party of the Gironde, the fall of which much affected him; and it was with great repugnance that he accepted the constitution of 1793, when formally presented to the army. In the mean time, he much distinguished himself at the head of his battalion; and Pichegru, under whom he served, did all he could to befriend him. The same year, he was made general of brigade, and, in 1794, general of division, and was intrusted with a separate force, to act in maritime Flanders, where he took many towns. He also had a share in the memorable winter campaign of 1794, in which he commanded the right wing of Pichegru's army. He was soon after named commander-in-chief of the army of the Rhine, and commenced that course of arduous operations which terminated in the celebrated retreat, from the extremity of Germany to the French frontier, in the face of a superior army, by which his skill as a consummate tactician was so much exalted. Meantime, the republic was torn with intestine divisions, and a conspiracy was entered into by Pichegru, which it was the fortune of Moreau to discover, by a correspondence which accidentally fell into his possession. After struggling, for some time, with his friendship for his old commander, he finally gave up these documents to the directory; but the evident reluctance with which he took this step, excited suspicions at Paris, and, finding that he could not explain himself satisfactorily, he begged leave to retire, which was granted. His talents as a general again brought him forward, and, in 1798, he was sent to command the army of Italy, where, after some brilliant successes, he was obliged to give way to the Russian force under Suwarrow, and he managed another retreat with great skill. On quitting the command in Italy for that on the Rhine, he visited Paris, where he received some propositions to strengthen the party of the declining directory, to which he would not accede. On the return of Bonaparte from Egypt, he at first cordially supported him; but a coldness and jealousy ensued; notwithstanding which the latter, as first consul, intrusted him with the command of the armies of the Danube and the Rhine. The passage of these rivers, with the battles of Moskirch, Engen, Memmingen, Biberach, Hochstadt, Nordlingen, and others, followed, ending with the decisive victory of Hohenlinden, which induced the Austrians to ask for peace. On his return to Paris, he was received by the first consul with the most flattering attention; and he soon after contracted an alliance with a young lady of birth and fortune, whose ambition, with that of her connexions, is supposed to have fomented the discontent which soon after induced him to retire to his estate at Groisbois. He was finally accused of participation in the conspiracy of Pichegru and Georges, was brought to trial, with fifty-four other persons, declared guilty upon slight evidence, and sentenced to two years' imprisonment, and to bear the expenses of the suit. He was, however, allowed to travel, in lieu of imprisonment, and to seek an asylum in the United States of America, on condition that he would not return to France without permission from the government. He accordingly embarked at Cadiz, in 1805, and safely reached America, where he bought a fine estate, near Morrisville, on the Delaware. Here he remained some years in peace, until, listening to the invitation of the allies, and more especially of Russia, he embarked for Europe in the July of that year, and reaching Gottenburg, proceeded to Prague. Here he found the emperors of Austria and Russia, with the king of Prussia, all of whom received him with great cordiality; and he was induced to aid in the direction of the allied armies against his own country. It was a fatal resolution to himself; for, on the 27th of August, soon after his arrival, while conversing with the emperor Alexander on horseback, in the battle before Dresden, a cannon ball fractured his right knee and leg, and carried away the calf of the the left, so as to render the amputation of both necessary. After languishing five days, he expired, Sept. 1, 1813. He was buried at St Petersburg, and the emperor of Russia made an ample provision for his widow, who also received the title of *maréchale* from Louis XVIII. The manners of Moreau were simple, and he was humane and generous, as well as brave. His great merits, as a soldier, all parties admit; but much of his personal conduct as a partisan, and especially that which led to the termination of his life, will be judged of variously by persons of different political opinions.

MORELL, Thomas; an eminent writer on philology and criticism, in the last century. He was a native of Eton, and received his education in the college there, as a scholar on the foundation. He removed to King's college, Cambridge, of which he was chosen a fellow, and, in 1743, took the degree of D. D., and entered into holy orders. His death took place in 1784, at the age of eighty. Doctor Morell republished, with improvements, King's edition of four of the tragedies of Euripides (1748, 2 vols., 8vo), and published an edition of the *Prometheus Vinctus* of Æschylus (4to); a Lexicon of Greek Prosody (4to); and a translation of the Epistles of Seneca, with notes (2 vols., 4to); selected the words for some of Handel's oratorios, and assisted in a modernized version of the Canterbury Tales of Chaucer.

MORELLET, Andrew; abbé, and member of the French academy, born at Lyons, March 7, 1727, and educated in the seminary of the Thirty-Three. His industry, regularity, and good conduct, obtained him admission into the institute of the Sorbonne, where he passed five years entirely devoted to study. He then accompanied a young nobleman to the college of Du Plessis, and afterwards on a tour to Italy, in the capacity of tutor. While at Rome, in 1758, he made an abstract of Eymeric's *Directorium Inquisitorum*, which was published four years later, under the title of *Manuel des Inquisiteurs*. On his return to Paris (1759), Morellet was admitted into the distinguished circle of Mad. Geoffrin; and, having published a satirical piece, in answer to Palissot's tragedy of the Philosopher, entitled *Préface des Philosophes*, in which he made an offensive allusion to the princess de Robecq, he was confined in the Bastile. In 1766, he published a translation of Beccaria on Crimes and Punishments, and, in 1769, issued a *Prospectus d'un nouveau Dictionnaire de Commerce*, on which he was employed twenty years, and which was suspended by the revolution. In 1772, he visited England, where he became acquainted with Franklin and other distinguished individuals; and, in 1783, his services were required in the negotiations for peace, between England and France, and were rewarded by a pension of 4000 livres. On the outbreak of the revolution, he published several pamphlets on political subjects, opposed the abolition of the academy, though without success, but succeeded in saving its archives from destruction. His *Cri des Familles*, in defence of the rights of the children of those who perished in the time of terror, and his *Cause des Pères*, in favour of the emigrants, while they hazarded his safety, gained the esteem of the good. The loss of his pension, at this time, obliged him to undertake the translation of several works, novels, travels, &c., from the English. On the establishment of the institute, he was passed over, but, in 1803, was admitted into the *académie.* A fall, which broke his leg, in 1815, at the age of eighty-eight, did not diminish his literary activity, and his last years were occupied with the *Mélanges de Littérature et de Philosophie du dix-huitième Siècle* (4 vols., 1818). He died in 1819. See the *Mémoires inédits de l'Abbé Morellet*, by Lemontey (Paris, 1823, 2 vols.).

MORELLI, Giacomo, the celebrated librarian of St Mark's, was born at Venice, in 1745, of poor parents, and received an imperfect education, the defects of which he endeavoured to supply by his personal exertions. His frequent visits to the Zenian library, and the nature of his studies, attracted the notice of the librarian Rubeis, who was so much pleased with his zeal and intelligence as to aid him in his pursuits. He visited the other libraries in the city and neighbourhood, copying, making extracts, taking notes, and compiling catalogues. He acquired a knowledge of Greek, and afterwards of French, and soon became known for his learning and industry. His *Bibliotheca manoscritta del Bali T. G. Farsetti* (1771—80), and his *Dissertazione storica intorno alla pubblica Libreria di S. Morco* (1774), and his *Codd. Mss. Lat. Bib. Nanianæ relati cum Opusculis ineditis ex iisdem depromptis* (1776), had already made him favourably known abroad, when, in 1778, he succeeded Zanetti as librarian of St Mark's. During forty-one years, he lived only for this library, which he increased by several valuable collections, obtained from his friends, and from public offices, and to the stores of which he gave new value by his arrangement of them. It is impossible to paint his grief when he was obliged to surrender some of the books to the French; and when the order for removing the library to the ducal palace was communicated to him, he burst into tears, and fainted away. Morelli compiled a catalogue of the Pinellian library, which he had himself arranged, in 6 vols. 8vo. His editions of Aristides against Leptine, Libanius's Defence of Socrates, Aristoxenos's *Rhythmica Elementa*, and his *Epistolæ septem variæ Eruditionis* (1819), and particularly his *Bibliotheca Manuscripta*, with numerous other works of a critical, bibliographical, and antiquarian nature, are monuments of profound learning, acute criticism, and unwearied industry. His *Operette* appeared at Venice, in 3 vols. (1820). He died in 1819.

MORENA, Sierra (*Ariani montes*, or *Marianus mons* of the ancients); a mountainous chain in the Spanish peninsula, which goes off from the Iberian mountains, runs through New Castile, divides Castile from Andalusia, and the latter from Estremadura, and terminates at cape St Vincent, on the western coast of Portugal. The highest summits are not over 3000 feet high. Different parts of it bear the name of *Sierra* (Spanish, *ridge*) *de Cordova*, *Sierra de Guadalcanal*, *Sierra de Caldeiraon*, and *Sierra de Monchique*. It is the scene of several events in Don Quixote. In 1768, during the reign of Charles III., Olavides (q. v.) established a colony, composed principally of foreigners, in the central part of the chain. It contained about 10,000 individuals at the time of his disgrace, but was then neglected, and mostly deserted by the colonists. In 1791, the number was 6200, chiefly Spaniards, who had taken the place of the original colonists. The colony was called *Nuevas Poblaciones de Sierra Morena;* the chief place, *La Carolina*, in honour of the king. The name of the chain (signifying, in Spanish, *black mountain*) is supposed to be derived from the dark appearance of its forests.

MORERI, Louis, a French ecclesiastic and biographical writer, born in Provence, in 1643, was educated among the Jesuits, at Aix, and, entering into holy orders, became almoner to the bishop of Apt. That prelate having formed the plan of a universal historical dictionary, caused researches for materials to be made, in various countries, and particularly in the Vatican library at Rome. Not choosing to let the work appear in his own name, he transferred his collections to Moreri, by whom they were arranged and prepared for the press. He published his *Dictionnaire Historique* at Lyons, in 1674, in one volume, folio; and a second edition, enlarged to two volumes, appeared in 1681. Moreri died in the course of the preceding year. The voluminous compilation to which his labours gave birth, having been variously augmented, by Le Clerc and other writers, extends, in the last edition (published at Paris, in 1759), to 10 vols., folio.

MORESQUES, in painting. See *Grotesques*.

MORETO Y CABANA, Augustin; an eminent Spanish dramatic poet in the reign of Philip IV., of whose life nothing is known, except that he wrote plays, sometimes in connexion with other writers, and sometimes by himself, but afterwards entered a religious house, and renounced poetry. In comedy, many prefer him to Calderon, although they blame the defects of his plots, and his incorrect style. Some of his plays are entirely comic, and distinguished for character, although in the form of the Spanish comedies of intrigue. His comedy *De fuera vendra, quien de Casa nos echara* (with several others, in Huarte's *Teatro Espanol)* contains several characters, drawn with much humour and comic power. His *Grazioso* (the clown or buffoon of the *comedias de capa y espada*) too often utters stale jests. His *El Desden con el Desden*, one of the most popular Spanish comedies, has been imitated in other languages (in French by Moliere, in his *Princesse d' Elide)*. His *No puede ser* was also brought upon the French stage, by Dumaniant, in the *Guerre ouverte*, and imitated, by Molière, in his *Ecole des Maris*. His dramas are found in the *Comedias de Moreto y Cabana* (1676—1681, 3 vols., 4to).

MORGAGNI, Giambattista; one of the most learned physicians and anatomists of Italy, born at Forli, in the States of the Church, in 1682, studied at Bologna, where the celebrated Valsalva was his friend and teacher, and soon became so distinguished in natural philosophy, medicine, and also astronomy, that he was able to assist his master in his lectures. But he devoted himself more particularly to the study of anatomy, and, in his twenty-fourth year, composed some important and valuable essays on anatomical subjects. After passing several years in his native city, as a practising physician, he became (in 1712) professor of medicine in Padua. His fame as an anatomist was extended throughout Europe, and procured him admittance to the principal academies. Among his numerous writings are his *Adversaria Anatomica omnia*. The Leyden edition of 1741 contains also *Nova Institutionum medicarum Idea; Epistolæ anatomicæ; De Sedibus et Causis Morborum*, &c. His complete works were published, before his death, by his pupil Larber (*Morgagni Opera omnia*, 1765). He died in 1771. His name has been given to several parts of the body discovered by him

MORGAN, William. See *Masonry, Free*.

MORGANA. See *Fata Morgana*.

MORGANATIC MARRIAGE (*matrimonium ad morganaticam, matrimonium ad legem Salicam*), from the Gothic word *morgjan* (to shorten, limit), also sometimes called, in Germany, a *left-handed marriage*, is one in which it is stipulated that the wife (who is inferior, in birth, to the husband) and her children shall not enjoy the privileges of his rank, nor inherit his possessions. The king of Prussia contracted an alliance of this kind with the present princess of Liegnitz. The common law of Germany permits such marriages only to the high nobility. They are often erroneously regarded as somewhat illegal, which is not the case, though serious objections can be raised against the principle.

MORGARTEN. On the frontiers of the canton of Schweitz, lies lake Ægeri. It is a league in length, very deep, and has numerous fish of every description. On the eastern border of the lake is the mountain of Morgarten, of which the greatest part belongs to the canton of Zug. Here the forest towns, Schweitz, Uri, and Unterwalden, laid the basis of the Swiss confederation, by the victory gained Dec. 6, 1315, over Leopold, archduke of Austria. (See *Switzerland*.) These cantons, united for ten years, declared themselves in favour of the emperor Louis of Bavaria, in consequence of their hatred to Austria. Frederic of Austria, therefore, the rival of Louis, placed them under the ban, and the bishop of Constance excommunicated them. The emperor Louis, and the archbishop of Mentz, however, absolved them from both sentences. Frederic then raised an army of 20,000 men, which, under the command of his brother, Leopold of Austria, advanced against the forest towns, whose power was limited to 1600 brave men. This little body occupied a narrow pass, between mount Morgarten and the lake Ægeri: part of them were stationed on the side of the steep mountain. Leopold's army had hardly penetrated the narrow pass, when the Swiss rolled heavy masses of stone upon them, which threw the cavalry into disorder, wounded and killed many of the enemy, and dispersed them. Leopold escaped. The three cantons now formed a perpetual league, Dec. 8, 1315, at Brunnen. By the year 1513, ten cantons had successively joined the confederacy.

MORGENSTERN. See *Battle-Axe*.

MORGHEN, Raphael, a celebrated engraver, was born at Naples, in 1758. He received his early instructions from his father, and was afterwards placed as a pupil under the celebrated Volpato, whom he assisted in engraving the famous pictures of Raphael, in the galleries of the Vatican. The print which represents the miracle of Bolsena is inscribed with his name. After having married the daughter of Volpato, he was invited to Florence, in 1782, to engrave the masterpieces of the Florentine gallery. Of the works which he produced on this occasion, his copy of Raphael's Madonna della seggiola is considered the most excellent. The reputation which he acquired by his labours on the Florentine gallery, induced the artists of Florence to recommend to the grand-duke to employ him in engraving Leonardo da Vinci's noble composition of the Last Supper, which is painted on the wall of the refectory, in the Dominicans' convent, at Milan. This picture is much dilapidated, and the drawing which was made from it for Morghen was by no means worthy of the original; so that, though the engraver has given to the world an admirable print, he has failed in giving a correct idea of the style and merit of Leonardo. In 1803, he was chosen an associate of the French institute; and, in 1812, he was invited to Paris, by Napoleon, who treated him with the most flattering kindness. Among the most remarkable of the other numerous works of Morghen, may be noticed the Transfiguration, from Raphael; a Magdalen, from Murillo; a head of the Saviour, from Da Vinci; the Car of Aurora, from Guido; the Hours, from Poussin; the Prize of Diana, from Domenichino; the Monument of Clement XIII., from Canova; Theseus vanquishing the Minotaur;

portraits of Dante, Petrarca, Ariosto, Tasso, &c. A complete list of his works, to the number of about 200, was published by Palmerini, at Florence, in 1810.

MORGUE, La; a place in Paris, where the bodies of unknown persons, who have perished by accident, murder, or suicide, are exposed, that they may be recognised by their friends. If not claimed after remaining three days, they are buried. The clothes of the deceased are hung by the side of the body, which is placed under a glass case, on a slab of black marble.

MORHOF, Daniel George, a learned philological writer, born at Wismar, in the duchy of Mecklenburg, in 1639, was educated at Stettin and Rostock, where he studied jurisprudence, but, in 1660, was chosen professor of poetry at the latter university. Previously to engaging in the duties of his office, he travelled, for two years, in Holland and Britain. In 1665, he became professor of poetry and rhetoric at Kiel. He visited Britain and Holland a second time in 1670, when he contracted an intimacy with Boyle, and with several of the Dutch literati. In 1673, he obtained the chair of history, at Kiel, and, in 1680, was appointed librarian to the university. He died in 1691, at Pyrmont, whither he had gone for the benefit of his health. He was the author of a valuable work, entitled *Polyhistor Litterarius, Philosophicus, et Practicus*, part of which he published at Lubeck, in 1688, and it was reprinted, with additions, in 1695; but the most complete edition is that of 1747 (2 vols., 4to). Morhof was also the author of a tract *De pura Dictione Latina*, and other works.

MORION; a kind of open helmet, without visor or beaver, somewhat resembling a hat, which was commonly worn by the arquebussiers and musketeers.

MORISCO. See *Moors*.

MORLACHIANS. See *Dalmatia*.

MORLAND, George, an eminent painter of rustic scenery and low life, was born in London, in 1764. He acquired a great degree of skill as a faithful copier of nature, and, in the early part of his career, confined himself to the delineation of picturesque landscape; but, having contracted irregular habits, and a partiality for the bottle and low company, he forsook the woods and fields for the ale-house; and stage-coachmen, postilions, and drovers drinking, became the favourite subjects of his pencil. Some of his best pieces exhibit farm-yards and stables, with dogs, horses, pigs, and cattle; or scenes at the door of the village ale-house designed with all the truth and feeling which communicate a charm to the meanest objects, and proclaim the genius of the artist. Many of his pictures were painted in the midst of embarrassments occasioned by his imprudence, and some of them while under confinement for debts which he had contracted. He fell a victim to intemperance, dying while in confinement, Oct. 29, 1804.

MORNAY, Philip de (sieur du Plessis Morlay), a distinguished French nobleman of the sixteenth century, born in 1549, at Buhi, in Normandy, was educated by his mother in the tenets of the reformed religion. In 1567, he entered the army, and bore his part in the civil wars, which, at that period, distracted France; but, after the massacre of St Bartholomew's, he left his country, and visited Switzerland, Germany, Italy, and a great part of the north of Europe, including England, where Elizabeth received him with distinguished marks of favour, as an able supporter of the Protestant cause. When, in 1576, Henry of Navarre (afterwards Henry IV., of France) openly placed himself at the head of the Huguenot party, De Mornay once more took up arms, and continued in the service of this monarch during the whole struggle against the league; but when, in 1593, Henry reconciled himself to the church of Rome, De Mornay sent in his resignation, and, retiring from court, devoted the remainder of his life to literary pursuits, and to advocating, with his pen, the cause of that religion which he had defended with his sword. His first work—a Treatise on the Church—appeared in 1578, and was followed, the succeeding year, by another, on the Truth of Christianity. His most able, as well as most celebrated work, was a Treatise on the Sacrament of the Lord's Supper (1598), in which he vindicated the Calvinistic doctrine, as opposed to that of transubstantiation; and cardinal Du Perron, two years after its publication, entering into a personal dispute with the author on the subject, in a conference at Fontainebleau, the latter maintained his argument with so much ability, as to acquire, from those of his own persuasion, the appellation of the *Protestant pope*. Seven years afterwards, he printed a history of the papacy, under the title of the Mystery of Iniquity. This estimable man, whose learning, constancy, and unblemished morals, acquired the respect even of his opponents, died in 1623, at his chateau of La Forest, in Poictou, whither he had retired, in 1621, after having been deprived of his government of Saumur, by Louis XIII. His *Mém. et Corresp. pour servir à l'Histoire de la Réformation et des Guerres civiles*, 1571—1623 (most complete edition, Paris, 1825, 15 vols., with a sketch of his life), is a valuable contribution to the history of the time. Voltaire has erected to him a fine monument in the Henriade.

MOROCCO (*Marokos*, or *Marasch*—part of ancient *Mauritania*); a large empire in the north-west part of Africa, bounded N. by the straits of Gibraltar and the Mediterranean, E. by Algiers, S. by Sahara, and W. by the Atlantic; about lon. 1° to 10° W.; lat. 29° to 36° N.; square miles, according to Graberg, 290,000. The limits and divisions are not well ascertained. It is divided into two parts by the great chain of the Atlas, which traverses it first from E. to W., and then from N. to S., leaving between itself and the sea a plain of from 50 to 100 miles in breadth. This plain, which is 400 or 500 miles in length, in an oblique line, includes all the populous and fertile part, comprising Morocco Proper and Fez. The division beyond the Atlas comprises Draha, Tafilet, Sugulmessa, &c. The population is variously estimated; by Graberg, at 5,000,000; by Chenier and Hoest, at 5,000,000 or 6,000,000; and by Jackson, at 14,886,000: population of the cities, according to Jackson, 995,000; of Morocco and Fez, N. and W. of Atlas, 10,300,000; the Brebers, 3,000,000; Tafilet, S. E. of Atlas, 650,000. This statement is said to have been taken from the imperial register, but is probably a great exaggeration. The chief towns are Morocco, the capital, Fez, Mequinez, Mogadore, the principal seaport, Tarudant, Rabat, Sallee, Tangiers, Saffet, and Tetuan. The government is a most barbarous despotism, under a chief, styled the sultan of Fez and Morocco, who is absolute master of the lives and fortunes of his subjects. In many parts of the country, his power is very precarious, and his superiority is acknowledged by many tribes merely by the payment of tribute. The religion is Mohammedan. The population consists of Moors, who live in the towns, and carry on trade; Arabs, who dwell in the country, in villages; Brebers, the oldest inhabitants of the land (see *Barbary States*); Negroes, who live in a state of freedom, dispersed over the country; Jews, in a great measure the descendants of those who were driven from Spain, by Ferdinand the Catholic; they are numerous, but despised and oppressed; renegado Jews and Christians, principally Spaniards; Christians, who are merchants, artisans, and slaves. The grand physical characteristic of the country is the great chain of the Atlas, the summits of which are covered with perpetual snow. The country between this chain and the ocean is watered by numerous streams from the mountains; is exuberantly fertile, producing grain, almonds, dates, and various other fruits. Silk and wool are plentiful. The leather called *morocco* (q v.) is manufactured from the skins of the goats of Tafilet. Morocco has mines of iron, tin, copper in abundance, antimony (more carefully worked than the others), and mineral salt in great plenty. (See *Barbary States*.) The early history is given in the article *Moors*. In 1557, Mehemed, a sherif, or one who claimed to be descended from the prophet, obtained possession of the throne of the empire, which is still occupied by his descendants. Frequent and bloody civil wars have been carried on by the royal princes, who have been, for the most part, distinguished only for their cruel despotism. The most ferocious of these tyrants was Muley Ismael, who died, after a long reign, in 1727. He was succeeded by his son Muley Abdallah, who ascended the throne after a long struggle with his brothers. That prince was followed in the government by his son Muley Sidi Mohammed (1757), who carried on war against France, Spain, and Portugal, but concluded treaties of peace with the other powers. On his death, in 1790, a war broke out between his sons, on the subject of the succession. Muley Soliman finally obtained possession of the throne, and, on the invasion of Egypt by the French, sent a contingent to the Turkish army. A treaty with the United States, which had been concluded with Sidi Mohammed, in 1786, was ratified by Muley Soliman in 1795. By this treaty, it was stipulated that prisoners made in war should not become slaves. On the death of Muley Soliman, in 1822, his nephew, Muley Abderrahman, the present sultan, succeeded him. He has been principally employed, since his accession, in endeavouring to restore domestic tranquillity, and reduce the rebellious tribes of the interior. He is bigoted, indolent, and luxurious, but, as he is not remarkable for any extreme tyranny or cruelty, he is considered a good monarch. The last accounts from Morocco (1831) describe the country as torn by internal dissensions, the Breber tribes of the mountains having gained some important advantages over the imperial forces. But this unquiet state is the usual condition of the empire. Besides the works referred to in the article *Barbary*, the reader may consult Jackson's *Morocco*, and Brooke's *Travels in Spain and Morocco* (London, 1831).

MOROCCO (called, by the natives, *Marasch*); city, and capital of the kingdom of Morocco; lon. 7° 15′ W.; lat. 31° 37′ N.; population, according to Chenier, about 30,000; some reduce it to 20,000; others state it at 40,000 or 50,000; Jackson raises it to 270,000. It is said to contain 2000 Jewish families. It is situated about 120 miles from the sea, in a pleasant plain, planted with palm trees. It was founded in 1052 A. D., and, in the following century, under the reign of Ali Ben Yusuf, it was in its highest prosperity, and has been represented as containing a population of 1,000,000. This is probably very much exaggerated; but the circuit of its walls appears still calculated for at least 300,000. It is now very much depopulated, covered with ruins of houses and gardens; the streets are filled with the rubbish of decayed buildings; and the habitations, being old, swarm with vermin. The temples, sanctuaries, and mosques are still numerous, and some of the latter lofty and splendid. The emperor's palace is of hewn stone, ornamented with marble. The air is clear and healthy, and the city is well supplied with excellent water from the river Tensift, which flows at a short distance.

MOROCCO, or MAROQUIN; a fine kind of leather, prepared from the skin of the goat, originally brought from the Levant and the Barbary States, but now manufactured in most other countries. It derives its name from the empire of Morocco, where it was probably invented, or first became known to Europeans. The colours most commonly communicated to it are red (by cochineal) and yellow (by the Avignon or yellow berries).

MOROSINI, Francesco, born 1618, was a gallant soldier, who, about the middle of the seventeenth century, in his capacity of governor of Candia, defended that island, with 30,000 men, against a Turkish force of four times that amount. Compelled at length to surrender, he obtained terms which were better observed by the Ottoman conquerors than was their wont; and although, on his return to Venice, he suffered a temporary disgrace, yet he soon recovered his credit with the government, and was appointed to the office of procurator of St Mark's. Sailing, afterwards, against his former antagonists, the Turks, he attacked their fleet, not far from the Dardanelles, and totally defeated it, with great loss both of ships and men. Returning in triumph to Venice, he continued to enjoy great popularity. In 1688, he was elected doge, and survived his elevation about six years, dying at Napoli di Romania, in 1694.

MOROXYLIC ACID; the name applied, by Klaproth, to an acid not yet fully examined, and which was found in combination with lime, forming a blackish-brown coating, on the trunk of a white mulberry tree, at Palermo. Its taste and other qualities approached nearest to those possessed by the succinic acid

MORPHEUS (from μορφη, form, because he assumes a variety of forms), in the Greek and Roman mythology; a servant of Somnus, or Sleep. He lived in a dark, silent cave, impenetrable by the rays of the sun, in Cimmeria. He is often confounded with the god of sleep, but is more strictly the god of dreams, and was often sent out to make known to mortals the will of the gods. He appeared only in a human form, his brother Phobetor (the Terrifier) being employed to assume the shape of beasts, and Phantasos that of inanimate objects. Morpheus is represented as a handsome youth, crowned with poppies, and holding in his hand a horn of plenty, from which he scatters various figures.

MORPHIA; a new vegetable alkali, extracted from opium, of which it constitutes the narcotic principle. It is obtained pure by the following process: A concentrated infusion of opium is boiled with a small quantity of common magnesia for a quarter of an hour: a considerable quantity of a grayish deposit falls: this is washed on a filter with cold water, and, when dry, digested in weak alcohol for some time, at a temperature beneath ebullition. In this way, very little morphia, but a great quantity of colouring matter is separated. The matter is then drained on a filter, washed with a little cold alcohol, and afterwards boiled with a large quantity of highly rectified alcohol. This liquid, being filtered while hot, on cooling, deposits the morphia in crystals, and very little coloured. The solution in alcohol and crystallization being repeated two or three times, colourless morphia is obtained. It crystallizes in double four-sided pyramids, whose bases are squares or rectangles; sometimes also in prisms with trapezoidal bases. It dissolves in eighty-two times its weight of boiling water, and the solution, on cooling, deposits regular and colourless crystals. It is soluble in thirty-six times its weight of boiling alcohol, and in forty-two times its weight of cold alcohol. It dissolves in eight times its weight of sulphuric ether. All these solutions change the infusion of brazil wood to violet, and the tincture of rhubarb to brown. According to M. Bussy, morphia consists of

Carbon,	69.0
Hydrogen,	6.5
Azote,	4.5
Oxygen,	20.0
	100.0

With acids, it forms a class of salts in like manner as do the other vegetable alkalis. *Sulphate of morphia* crystallizes in prisms, which dissolve in twice their weight of distilled water. They are composed of

Acid,	22
Morphia,	40
Water,	38
	100

Nitrate of morphia yields needle-formed crystals in stars, which are soluble in one and a half times their weight of distilled water. *Muriate of morphia* is soluble in ten and a half times its weight of distilled water. The acetate crystallizes in needles, the tartrate in prisms, and the carbonate in short prisms. Tincture of galls is said to be a good test of morphia, free or combined. Subacetate of lead throws down all the animal matters with which acetate of morphia may come to be associated in the stomach, without acting on that vegetable salt. The excess of lead may be separated from the clear liquor by a few bubbles of sulphureted hydrogen; and the morphia may then be recognised by crystallization *in vacuo*, and by the red colour which nitric acid imparts to it. No morphia is found in the blood of animals killed with it. Morphia acts with great energy on the animal economy. A grain and a half, taken at three different times, produced such violent symptoms upon three young men of seventeen years of age, that Sertürner was alarmed lest the consequences should have proved fatal.

MORPHOLOGY (from μοϱφη, form, and λογος, doctrine); the science which treats of the formation and constant change of organic bodies. Goethe, the German poet, first formed the word, and treated the subject as a separate branch of natural history. In his *Beiträge zur Naturwissenschaft überhaupt und zur Morphologie insbesondere* (Tübingen, 1817, et seq.), he directs attention to the uninterrupted change of all bodies, particularly organic bodies, and the fact of their consisting, even when they appear as single individuals, of parts which contain the germs of individual life within them. He shows this to be the case with plants from their propagation by eyes and cuttings. The growth from seed appears to him quite a similar phenomenon. Among animals, he adduces the instance of the *infusoria*. The polypes and some reptiles whose parts, on division, form entire animals, might likewise be mentioned.

MORRIS, Robert, the chief financier of the American revolution, was born in Lancashire, England, January, 1733—4, O. S., of respectable parentage. His father embarked for America, and caused him to follow at the age of thirteen. He received only an English education, and, before he reached his fifteenth year, was placed in the counting-house of Mr Charles Willing, at that time one of the first merchants of Philadelphia. Fidelity, diligence, and capacity gained him the full confidence and favour of Mr Willing, after whose death he was taken into partnership by his son, Thomas Willing, subsequently president of the bank of the United States of America. This partnership lasted from the year 1754 until 1793,—the long period of thirty-nine years. At the commencement of the American revolution, Mr Morris was more extensively engaged in commerce than any other merchant of Philadelphia. No one embraced the American cause with more zeal and firmness, and few with more influence and risk. He declared himself immediately against the stamp act, signed, without hesitation, the non-importation agreement of 1765, and, in so doing, the house of Willing and Morris made a direct and serious sacrifice of trade. In 1775, Mr Morris was appointed by the legislature of Pennsylvania one of the delegates to the second general congress. He was placed upon every committee of ways and means, and connected with all the deliberations and arrangements relative to the navy, maritime affairs, and financial interests. Besides aiding his country by his judgment and talents for business, he borrowed money, to a very large amount, on his personal responsibility, for the use of the government. This personal credit, growing out of his reputation for probity, ability, and resources, was wonderful, and of incalculable advantage to the American cause. It rarely failed, when the treasury yielded nothing for the public exigencies. In May, 1777, he was elected a third time to congress, by the legislature of Pennsylvania, and continued to be the soul of the financial concerns. Washington, to whom he was deputed by congress, in the autumn of 1777, conceived the utmost faith in his patriotism and ability, which all the subsequent events of their intimate intercourse and the connexion of Morris with public affairs served to perpetuate. In the year 1780, Mr Morris established a bank by subscription, of which his share was £10,000, mainly with the object of supplying the army with provisions, —3,000,000 of rations, and 300 hogsheads of rum. It continued until the following year, when the bank of North America was founded. His extensive commercial and private correspondence with Great Britain and the continent, furnished him with early and important political information. His constant manifestations of confidence in the issue of the revolutionary struggle inspired many others with the same sentiment. His whole example did incalculable service. February 20, 1781, he was appointed superintendent of finance, and, by subsequent resolutions of congress, vested with powers which gave him, in fact, the control of all the public pecuniary interests. This arduous office he admirably discharged until the end of the war. "The whole business of finance," said he, "may be comprised in two short but comprehensive sentences,—it is to raise the public revenue by such modes as may be most easy, and most equal to the people, and to expend it in the most frugal, fair, and honest manner." The condition of the treasury, when he undertook it, was nearly as bad as possible. Upon its improvement depended the preservation of the military force. The establishment of the bank of North America was one of his first and most beneficial measures. The notes of the institution were declared by congress receivable as gold and silver for the payment of all duties and taxes in each of the United States. Morris furnished the plan, and published it, with a cogent appeal to the patriotism of all American citizens. A contemporary writer has remarked that "the sudden restoration of public and private credit, which took place on the establishment of the bank, was an event as extraordinary in itself as any domestic occurrence during the progress of the revolution." At this time, the private fortune of Mr Morris was ample, but supposed to be much larger than it really was; and he rendered this personal credit subservient to the public good. He pledged it whenever his official resources were inadequate. His advances at particular times, on account of the confederacy or of individual states, were enormous. His general situation, and the impossibility of relieving all the wants which were referred to his department, exposed him to slanderous charges and harsh suspicions, which have in no instance withstood a fair inquiry. The necessary supplies of every thing required for Washington's expedition against Cornwallis were obtained chiefly by means of Mr Morris's credit. He issued his own notes to the amount of *one million four hundred thousand dollars*, which were finally all paid. These were the sinews of war, without which Cornwallis could not have been captured. The history of the difficulties which he had to evade or overcome, and the expedients to which he resorted in the course of his financial administration, would fill a volume. A number of them are related, with interesting details, in the sketch of his career, included in the Biography of the Signers of the Declaration of Independence. They are also stated, in the most instructive and impressive manner, in that part of his able and voluminous correspondence, which has been given to the world. January 24, 1783, Mr Morris announced to the president of congress his intention to resign the office of superintendent of finance. Nothing but the public danger could have induced him to accept it, and, the danger being past, he felt himself at liberty to escape from excessive toil and manifold liability. He consented, however, to serve until the first of May. On the 2d of May, after repeated conferences with a committee of congress, he was prevailed upon to continue in office, and he did not finally leave it until November, 1784. At his request, in May of that year, congress appointed a board of treasury commissioners, who were to co-operate with and succeed him in the management of the finances. In rendering an account of his stewardship, he published an able address to the inhabitants of the United States, containing excellent counsel. In September, 1781, congress had resolved that "until an agent of marine should be appointed, all the duties, powers, and authority assigned to that office should devolve on, and be executed by the superintendent of finance." The additional burden was irksome to Mr Morris. No agent was appointed, and he was thus obliged to administer the affairs of the navy, until the close of the year 1784. His expansive faculties, his habits of order, his energy and rigid justice in the transaction of business, enabled him to acquit himself creditably in this sphere. In 1786, Mr Morris consented to be elected into the assembly of Pennsylvania, in order to obtain the renewal of the charter of the bank of North America. Party spirit prevailed over his logic and eloquence; but the exertions of the friends of the institution were, in the succeeding legislature, crowned with success. In 1786 he was elected a member of the convention which framed the federal constitution. No man had more often and severely felt the want of an efficient government. He had incessantly asked for a stronger bond, or instrument, than the old confederation, for "a firm, wise, manly system of federal government;" and he strenuously co-operated in devising and recommending the present. In 1788, the general assembly of Pennsylvania appointed him to represent the state in the first senate of the United States, which assembled at New York. As a member of that body, he distinguished himself by wise counsels, and particularly by an irresistible speech for the repeal of the tender laws. He was a fluent, correct, and impressive orator; he wrote with ease and terseness; his fund of political knowledge could not but be ample; his acquaintance with the affairs of the world exceeded, in extent and diversity, that of any of his fellow patriots, Franklin excepted; his conversation was therefore replete with interest and instruction. When the federal government was organized, Washington offered him the post of secretary of the treasury, which he declined; and, being requested to designate a person for it, he named general Hamilton,—a most happy though not an expected choice. At the conclusion of the war, he was among the first who engaged in the East India and China trade. In the spring of 1784, he despatched the ship Empress of China, captain Green, from New York to Canton, being the first American vessel that ever appeared in that port. He also made the first attempt to effect what is termed an *out of season* passage to China. This passage is effected by going round the south cape of New Holland, thus avoiding the periodical winds prevalent at certain periods in the China sea. In prosecution of this object, the ship Alliance, captain Read, equipped with ten twelve-pounders, and sixty-five men, sailed from the Delaware, June 20, 1787, and arrived in safety, Dec. 22, at Canton, where considerable inquiries were made by the European commanders respecting the route that had been taken, as it was wholly a novel thing for a vessel to arrive at that season of the year. As no ship had ever before made a similar passage, great astonishment was manifested; and the lords of the admiralty subsequently applied to Mr Morris for information with regard to the track of the ship. It is said that her probable route was, previous to her departure, marked out by Mr Morris, with the assistance of Mr Gouverneur Morris. In his old age, Mr Morris embarked in vast land speculations, which proved fatal to his fortune. The man to whose financial operations the Americans were said to owe as much as to the negotiations of Franklin, or even the arms of Washington, passed the latter years of his life in prison, confined for debt. He sunk into the tomb on the 8th of May, 1806. Mr Morris was of large frame, with a fine, open, bland countenance, and simple manners. Until the period of his impoverishment, his house was a scene of the most liberal hospitality. It was open, for nearly half a century, to all the strangers of good society who visited Philadelphia. He was temperate in food, but fond of convivial meetings. No one parted with his money more freely for public or private purposes of a meritorious nature.

MORRIS, Gouverneur, an eminent American statesman and orator, was born at Morrisania, near the city of New York, January 31, 1752. He was educated at King's college in that city, where he was graduated bachelor of arts in May, 1768. Immediately after he entered the office of William Smith (the historian of the colony), as a student of law. In 1771, he was licensed to practice law. His proficiency in all his studies was remarkable. He acquired early much reputation as a man of brilliant talents and various promise. His person, address, manners, elocution, were of a superior order. In May, 1775, Mr Morris was chosen a delegate to the provincial congress of New York. In June of that year, he served on a committee with general Montgomery, to confer with general Washington respecting the manner of his introduction to the congress. He entered with zeal and efficiency into all the questions and proceedings which referred to a vigorous resistance to the pretensions of the mother country. In 1776 (December), he acted as one of the committee for drafting a constitution for the state of New York, which was reported in March, and adopted in April, of that year, after repeated and very able debates, in which Jay, Morris, and Robert R. Livingston were the principal speakers. In July, 1777, he served as member of a committee from the New York congress, to repair to the headquarters of Schuyler's army, to inquire into the causes of the evacuation of Ticonderoga. In October of that year, he joined the continental congress at York, Pennsylvania, and, in 1778, wrote the patriotic and successful pamphlet called Observations on the American Revolution, which he published at the beginning of 1779. We must refer to the journals of congress for an account of his many and valuable services, rendered in that body to the revolutionary cause. In July, 1781, he accepted the post of assistant superintendent of finance, as the colleague of Robert Morris. He filled every office to which he was called with characteristic zeal and ability. After the war of the revolution, he embarked, with Robert Morris, in mercantile enterprises. In 1785, he published an Address to the Assembly of Pennsylvania on the Abolition of the Bank of North America, in which he cogently argued against that project. In December, 1786, he purchased from his brother the fine estate of Morrisania, and made it his dwelling-place. Here he devoted himself to liberal studies. In the following year, he served with distinction as a member of the convention for framing the constitution of the United States. December 15, 1788, he sailed for France, where he was occupied in selling lands and pursuing money speculations until March, 1790, when he proceeded to London as private agent of the American government with regard to the conditions of the old treaty, and the inclination of the British cabinet to form a commercial treaty. In November, 1790, he returned to Paris, having made a tour in Germany. In the interval between this period and the beginning of the year 1792, he passed several times on public business between the British and French capitals. February 6, 1792, he received his appointment as minister plenipotentiary to France, and was presented to the king, June 3. He held this station with great *éclat* until October, 1794. He witnessed the most interesting scenes of the revolution in the capital, and maintained personal intercourse with the conspicuous politicians of the several parties. The abundant memorials which he has left of his sojourn in France, and his travels on the European continent, possess the highest interest and much historical value. He made extensive journeys after he ceased to be minister plenipotentiary, of which he kept a full diary. In the autumn of 1798, Mr Morris returned to the United States, to engage in politics, with enhanced celebrity and a large additional stock of political and literary knowledge. He was universally admitted to be one of the most accomplished and prominent gentlemen of his country. In 1800 he entered the senate of the United States, where his eloquence and information made him conspicuous. The two eulogies which he pronounced—one on general Washington, and the other at the funeral of general Hamilton—are specimens of his rhetorical style. His delivery was excellent. Mr Morris, at an early period, gave special and sagacious attention to the project of that grand canal by which the state of New York has been so much honoured and benefited. In the summer of 1810, he examined the canal route to lake Erie. The share which he had in originating and promoting that noble work, is stated in the regular history which has been published of its conception and progress. In May, 1812, he pronounced a public and impressive eulogium on the venerable George Clinton; in the same year, an oration before the New York historical society; in 1814, another on the restoration of the Bourbons in France; in 1816, a discourse before the New York historical society. Mr Morris died at Morrisania, November 5, 1816. He passed the latter years of his life at Morrisania, exercising an elegant and munificent hospitality, reviewing the studies of his early days, and carrying on a very interesting commerce of letters with statesmen and literati in Europe and America. The activity of his mind, the richness of his fancy, and the copiousness of his eloquent conversation, were the admiration of all his acquaintance. A selection from his voluminous and valuable papers, accompanied by a sketch of his life, has been published by Mr Jared Sparks.

MORRIS-DANCE (from Morisco, Moorish), supposed to have been derived from the Moriscos in Spain, was formerly danced at puppet-shows, May-games, &c., in England. According to some writers, it was introduced into England in the reign of Edward III., when John of Gaunt returned from Spain; but it was more probably borrowed from France or the Low countries. In the reigns of Henry VII. and VIII., it was a principal feature in the popular festivals. In the May-games of Robin Hood, and the pageant of the Lord of Misrule, morris-dancers formed an important part. The more ancient May-game and morris consisted of the following characters: Robin Hood, Little John, Friar Tuck, Maid Marian, the queen or lady of the May, the fool, the piper, and several dancers, variously habited. A hobby-horse and a dragon were afterwards added. In the reign of Henry VIII., the morris-dancers were dressed in gilt leather and silver paper, and sometimes in coats of white and spangled fustian. Bells, to the number of thirty or forty, hung from their garters, and purses were stuck in their girdles. See Douce's *Dissertation on the Ancient English Morris-Dance*, in vol. ii. of his *Illustrations of Shakspeare*.

MORSE. See *Walrus*.

MORTALITY. The law of mortality is that which determines the proportion of the number of persons who die in any assigned period of life or interval of age, out of a given number who enter upon the same interval, and consequently the proportion of those who survive. Tables showing how many out of a great number of children, as 10,000, or 100,000, born alive, die in each year of their age, and consequently how many complete each year, and exhibiting this law through the whole extent of life, are called *tables of mortality*. The basis of such calculations must be an accurate register of the number of births and deaths, and in the case of the latter, at what ages, in a given district or extent of country. In England, the bills of mortality, or abstracts from parish registers, show the numbers who are born and die in the different parishes; and in other countries similar mortuary registers are kept. The results furnished by such tables are very various, and of great interest. If the registers are kept with sufficient accuracy and minuteness, they would enable us to determine the proportion of deaths, not only at different ages, and in different regions, but at different seasons, in persons of different occupations and habits, in towns, or the country, and would afford valuable materials for the science of political economy. Although much more attention has been paid to this subject in recent times, yet the observations have not been so extensive nor so accurate as is desirable. The first table of mortality was constructed by doctor Halley, from the mortuary registers of Breslau, for five years ending with 1691, and was inserted in his paper on the subject in the Philosophical Transactions for 1693, with many useful observations on the purposes to which such tables may be applied. In 1742, the celebrated work of Sussmilch on this subject appeared under the title of *Die gottliche Ordnung in die Veran derungen des menschlichen Geschlechts*, &c. (2 vols.), of which a third edition was published in 1775, with a supplementary volume by Baumann. Since that period, many valuable works have been published on the subject, by Deparcieux, Struyck, Birch, Muret, Messance, Price, Krafft, Barton (American Phil. Soc., 1793), &c., and registers have been kept more generally and with greater care. For different views of the subject, see *Annuities*, *Longevity*, *Physiology*.

MORTAR is a kind of short cannon, of a large bore, with chambers. Mortars are made of stone, brass, or iron. Their use is to throw hollow shells filled with powder, which, falling on any building, or into the works of a fortification, burst, and their fragments destroy every thing within reach; also balls of stone, carcasses (q. v.), bags filled with grape shot, &c. They were first used in sieges, for throwing great balls of stone and of red-hot iron, before the invention of shells. On this account, the caliber of a mortar, in Germany, is generally estimated by the weight of a stone of the size of the bomb which it is intended to throw. In Denmark and Russia, on the contrary, the caliber is estimated by the actual weight of an iron ball fitting it; in Britain and France, by its diameter in inches. In the larger states of Europe, ten, sixteen, twenty-five, thirty, fifty, and sixty pound mortars, according to the stone weight measure, are used. In the Prussian army, seven, ten, twenty-five, fifty, seventy-five pound mortars are customary. Formerly they were used even of 120 pounds' weight; but these are not employed at present, except in particular cases. Their length is generally from two and three-fourths to three and one-fourth times the diameter of the caliber. The interior parts of a mortar are the chamber, the bore, the mouth, the vent. The chamber is the place where the charge of powder is lodged. The shape of the chamber varies. It is generally conical, more or less truncated. *Land mortars* are those used in sieges, and mounted on beds. The beds are made of very solid timber, and placed upon very strong timber frames. The bed is so made as to turn round. *Stone mortars* serve to throw stones into the enemy's works, when near at hand. *Sea mortars* are those which are fixed in bomb-vessels, for bombarding places by sea. They are made much longer, and somewhat heavier than land mortars. The use of mortars is thought to be older than that of cannon, for they were employed in the wars of Italy to throw balls of red-hot iron and stones long before the invention of shells. It is generally believed that the Germans were the inventors, and that they were used at the siege of Naples, in the reign of Charles VIII., in 1435. It is more certain that shells were thrown out of mortars at the siege of Wachtendonk, in 1588, by the count of Mansfeld. For further information, see *Bomb*, and *Howitzer*.

MORTAR. See *Cement*.

MORTGAGE. A mortgage is a conveyance or transfer of real or personal estate to secure the grantee or assignee the payment of some debt, or the performance of some agreement, with a condition or understanding that, in case of the debt being paid, or the agreement being performed within a certain time, and in the specified manner, the conveyance or assignment shall be void, and the land, or personal property revert to, or rather, still belong to the mortgager. The English, and so the American mortgage of land is mostly borrowed from the civil law (see Kent's *Commentaries*, vol. iv., part 4, lecture 57; Brown's *Civil Law*, vol. i., p. 200), or, at least, many of the rules and incidents of the Roman *hypotheca* coincide with ours relating to mortgages. The essential characteristic of a mortgage, however, according to the import and definition of the term, must be the same in all countries, namely, an agreement that the property conveyed or transferred, whether real or personal, shall not absolutely go, and belong to the grantee or assignee, in case the debt intended to be secured shall be paid, or the contract, whatever it may be, intended to be guaranteed, shall be performed within the time and terms agreed upon. The rules and incidents of such an hypothecation will therefore have some resemblance under all codes of laws. There is no limitation of the kind of debts or contracts, the payment or performance of which may be secured by mortgage; for all legal ones may be so guaranteed. What will be a sufficient conveyance of the property, whether real or personal, will again depend on the laws of the place. A conveyance of land, for instance, must, in most countries, be made in writing, and with certain formalities. So in England, the right of property in a ship must appear by a bill of sale. Whatever these rules are by which the absolute transfer of property is regulated, they will equally apply to a conveyance or assignment by way of hypothecation. As real estate is usually required by the laws to be conveyed by written documents, and according to the laws of most places, these conveyances are evidenced by public records of the instruments by which they are made, there is no necessity of an open, visible possession of the estate by the grantee, that the public may take notice of the grant, for they may find the evidence of it at the office of public record. The case is not the same with personal property, the title to which is usually confirmed and established to the purchaser by a delivery of the article into his possession. In respect to all chattels, of which manual possession and transfer from place to place is practicable, the delivery by the vender, and actual possession by the purchaser, are very material circumstances in establishing the right of property in the latter. It is, indeed, laid down as a maxim of the English, and also of the American law, that movables cannot be validly sold or mortgaged without a delivery, actual or constructive, to the purchaser or mortgagee, and a possession by him. But this rule is very much modified and relaxed; not that a delivery to, and possession by the vendee and mortgagee are not considered requisite to establish his title, but a very liberal interpretation has been put upon circumstances showing a constructive delivery and possession. The object and policy of the law is to leave the movable, just as it does land, to be used either by the mortgager or mortgagee, without affecting their mutual rights and obligations as to the property in the thing, as far as this indulgence can be carried without leading other persons into a misapprehension, and exposing them to fraud and imposition in giving credit to the mortgager, upon the supposition of his being the absolute owner of the property hypothecated. The various rules and distinctions by which the mortgage of chattels is regulated in this respect, constitute an essential part of the law upon this subject. But, after all, we may lay it down as a general doctrine, that a mortgaged chattel must be in possession of the mortgagee, in order to render his title secure; and where the mortgage has, by the law, been permitted still to use the thing, it is only in cases where his possession is, in legal construction, that of the mortgagee. The most material consideration relating to mortgages, whether of lands or chattels, is the effect of the non-performance of the condition by the mortgager. This will depend, it is true, in part, upon the terms of the contract of hypothecation or mortgage. If it be agreed between the parties, that, in case of non-performance of the condition of the hypothecation, the mortgagee shall sell the thing hypothecated, whether land or goods, and account to the mortgager for the proceeds in satisfaction of the debt or discharge of the obligation intended to be secured, and pay over the surplus, if any, this is all that justice or the law can demand; and this is, in effect, what the law aims at where the parties do not make any such stipulation, but, on the contrary, agree, either expressly or impliedly, that in case of a non-performance of the condition, the thing mortgaged shall be absolutely and immediately forfeited to the mortgagee, without any right on the part of the mortgager to redeem it, or to call upon the mortgagee to sell it and account with him for the proceeds. Thus, in the common form of mortgaging land, it is conveyed to the mortgagee with a provision, that in case he shall pay a certain debt, or do a certain thing within a time specified, the conveyance shall be void. According to the literal construction, therefore, if this condition is not complied with, the thing thenceforth belongs absolutely to the mortgagee. But here the law steps in and controls the agreement, and attempts to prevent it from operating as a penalty or forfeiture, at the same time giving it all its force as a security or guarantee. For this purpose, different modes are adopted in different codes of laws, all of which agree in applying the value of the thing mortgaged in satisfaction and discharge of the debt or obligation intended to be secured; so that by all the codes justice is done, if there is no surplus value. But if there be a surplus value, some of the codes will reach it, and others not, and the same code will reach it in regard to one kind of pledge, mortgage, or hypothecation, and not another. For example, by the English law, if a debtor pledges bills of exchange or any personal property for a debt, to an amount exceeding its value, the creditor must account for the proceeds, and pay over the surplus to his debtor; but if the debtor mortgages lands, of which the creditor takes possession for breach of condition, the debtor has three years to redeem it, after which time the land is absolutely gone, though twice the amount of the debt in value.

MORTIER. See *Cap.*

MORTIFICATION, in medicine, is the death of a part of the body while the rest continues alive, and often in a sound state. If the part be a vital organ, as the lungs, its death must necessarily be followed by that of the whole person. Mortification is called *gangrene* and *sphacelus*, when occurring in soft or fleshy parts, as in the stomach or the limbs; and *caries* when in a bone, as in the spine, in the skull, &c. It is caused by violent inflammation, by exposure to freezing cold, by hospital fevers, by languid, or impeded, or stopped circulation, as in cases of bedridden or palsied persons, and by improper food, particularly the spurred or mildewed grain. It may be recognised, when preceded by inflammation, by the following signs: subsidence of pain, heat and redness, and loss of sensibility; brown lividity, blistered skin, with bloody serum in the vesicles, offensive odour occurring in the part, and by a small, rapid, intermitting pulse; by shiverings followed with cold sweat, diarrhœa, delirium, hickup, dejection of spirits, and by a wild, cadaverous countenance. When a part having been frozen is suddenly exposed to heat, mortification rapidly ensues; the part becomes florid; inflammation is unsuccessfully attempted, and sphacelus is the result. In the above species a distinctly marked line divides the dead and living portions; often a healthy separation ensues. Mortification is common in the fevers, wounds, and injuries of the crowded jails and military hospitals of Europe. This gangrene is considered contagious by some surgeons, the nurses and orderlies suffering from ulcers and sloughs on the hands, when touched with the sponges used in cleansing the sick. The same effect is produced on the sound portions of the skin of the sick. This hospital gangrene is distinguished by its rapid spread to contiguous parts, as from fingers to arms, by the oozing of grumous blood, by horrible fetor, by fatal depression of spirits, and by the sullen despair of patients who, on the day of battle or of amputation, were the bravest of the brave. Sometimes the cutting a nail to the quick, or a slight bruise, will induce gangrene in old or debilitated persons.

Mildew mortification differs from other kinds in appearance and process, beginning with coldness and numbness in fingers or toes, without fever, but with spasms, and hebetude of mind; it separates arms, legs, or thighs, and nose. It is more often found in the voluptuous rich than in the labouring poor, in huge feeders than in free drinkers. It is thought to be connected with a diseased state of the digestive organs, and great nervous debility. Mr Pott sometimes checked it by opium in a few days, and, after the dropping off of the affected parts, the patients recovered health. There is a dry gangrene to which palsied persons, as well as others, are liable, which slowly destroys the limb, and commonly without inflammation or putrefaction. This is sometimes explained by the absence of warmth, and moisture, and air, which are removed by preceding atrophy—the colour livid, though sometimes nearly natural. When the bones of the leg mortify, or become carious, new osseous matter is provided, in sound constitutions. This process, occupying years when left to nature, is much accelerated by the artificial removal of the dead bone.

MORTMAIN. Lands held by a corporation are said to be held in mortmain (*mortua manu*, dead hand); the meaning of which is that the estate is a perpetuity, or, in other words, is not alienable. The expression has particular reference to estates held by the religious and eleemosynary corporations in England, which became objects of jealousy very early, it being apprehended that all the lands of the kingdom might come by conveyances prompted by the piety or superstition of proprietors into the hands of those corporations. Accordingly, conveyances and devises to corporations, civil or ecclesiastical, were forbidden by *magna charta*, and have been restrained and interdicted by subsequent statutes. In the United States, the amount of real estate that may be held by a corporation is usually limited in its charter, and it is also understood, as the general law, that any corporation can only hold land for the purposes of its incorporation, unless authority is expressly given in its charter. The English statutes of mortmain have been held to be in force in Pennsylvania (3 Binney's Reports. App. 626), but they have not been expressly recognised as being a part of the common law in other states.

MORVEAU, Louis Bernard Guyton de baron, a celebrated chemist, born at Dijon, January 4, 1737, distinguished himself, in 1773, by the invention of the method of purifying the atmosphere by means of chlorine, which is now generally employed with the greatest success. Morveau was previously general-advocate of the parliament at Dijon, an able man of business, eloquent and upright. He founded a school at Dijon for his favourite study chemistry, and, during thirteen years, himself conducted it. In 1801, appeared his *Description complète des Procédés de Désinfection.* In 1791 he was made member of the national assembly, afterwards of the convention. At the battle of Fleurus, he ascended in a balloon. In 1797, he retired to private life. Subsequently he was chosen a director of the polytechnic school, which he assisted to establish, and a member of the institute. After the restoration he was pensioned. He died January 2, 1816. His wife translated several chemical works from the English, Swedish, and German; also Werner's treatise on the exterior characters of fossils (1790).

MORVEN. See *Fingal.*

MORVIEDRO, or MURVIEDRO; a town of Spain, in Valencia, thirteen miles north north-east of

Valencia; lon. 22′ W.; lat. 39° 38′ N.; population 6273. It is supposed to be the ancient *Saguntum* destroyed by Hannibal, and which fell a victim to its fidelity to the Romans. It was afterwards rebuilt by the Romans with great splendour. The city of Morviedro is full of the remains of antiquity; the walls of the houses, the city gates, and doors of the churches and inns, are covered with Roman inscriptions. The most curious monuments are the castle and the theatre. The name is supposed to be derived from an allusion to this circumstance—*muri veteres* (ancient walls).

MOSAICS are imitations of paintings by means of coloured stones, pieces of glass, of marble, and even of wood of different colours, cemented together with much art. The name is sometimes supposed to be derived from *Moses*, as the pretended inventor; sometimes from *Musa*, in the sense of elegance, beauty; and sometimes from *μουσειον*, museum (a grotto consecrated to the muses), perhaps from the circumstance that mosaic work was first used in grottoes. The Italian *musaico*, as well as the French *mosaïque*, originated from the word *musaicon* of the Byzantine Greeks, who first introduced the art into Italy. We know nothing with precision of the invention and history of this art in antiquity. Probably it originated in the East, but received its perfection from the Greeks, and was thus conveyed to the Romans in Sylla's time. In Italy, and in most of the countries occupied by the Romans, many floors ornamented with mosaic work have been found amongst the ruins. When, in the fifth century, the arts and sciences were driven from Italy by the distracted state of the country, this art was preserved by the Byzantine Greeks, and was restored to Italy in the thirteenth century, where it attained the highest perfection, particularly when Clement VIII., at the commencement of the seventeenth century, had the whole of the interior of the dome of St Peter's ornamented with this work. Giambattista Calandra improved mosaic by the invention of a new cement. He and many succeeding artists employed the art for copying original paintings of famous artists, and thus eternizing them in their original freshness and beauty; for one of the greatest advantages of this kind of painting is its wonderful power of preservation. In this manner Guercino's Martyrdom of St Petronilla, and Dominichino's Communion of the dying St Jerome, were preserved. Peter Paul, of Christophoris, founded, at the commencement of the eighteenth century, a school for mosaic in Rome, and many of his scholars carried the art to a still higher degree of excellence. In recent times two kinds of mosaic are particularly famous,—the Roman and the Florentine. In the former the paintings are formed by joining very small pieces of stone, which gives greater variety and elegance, and facilitates the representation of large historical paintings. The Florentine style, which makes use of larger pieces of stone, is far more troublesome, and is adapted only for small paintings. Mosaic in wood the Italians call *tansia* or *tarsia;* the French *marqueterie.* (See *Marquetry.*) In the most costly mosaics, precious stones have been cut to furnish materials; but in common works of this art enamels of different colours, manufactured for the purpose, are the material employed. The enamel is first formed into sticks, from the ends of which pieces of the requisite size are cut or broken off. These are confined in their proper places upon a plate of metal or stone, by a cement made of quicklime, pulverized limestone, and linseed oil. The cement is spread over the plate, and a drawing made on it to guide the artist before he commences his work. He has also constantly before him the painting to be copied. After the whole has adhered, it is allowed to dry two months, and is then polished with a flat stone and emery. Inlaid works, of agate and other costly stones, are executed on the same principle as mosaic, except that the stones are larger, and cut to the shape of different parts of the object to be represented, whereas in mosaic the pieces are of the same size and shape. The *opus reticulatum* of the ancients, with which columns and walls were sometimes incrusted, is found to consist of small stones, of a pyramidal form, the apex of which is imbedded in mortar, while the base, which is polished, forms the outer surface. A mode has recently been invented of sawing the plate with the mosaic paintings into two or three sheets, and thus multiplying the paintings. Should smoke or dirt soil the surface, it has only to be polished to be restored to its original beauty. In 1819, Fernbach, a native of Baden, invented a new kind of mosaic painting, imitating with surprising fidelity the colour, the juncture, the lustre, &c., of mineral bodies. Professor Blank's mosaics of moss have also attracted much attention.—See J. B. Blank's description of his *Mosaic Paintings* (Wurtzburg, 1820).

MOSAMBIQUE, or MOSAMBICO; a kingdom of Africa, on the east coast, and in that part of the Indian sea which passes between the continent and the island of Madagascar. It takes its name from the capital, situated on an island, the chief of three islands which form a part of the kingdom. The city of Mosambico is said to have once been very handsome; the houses well built, especially the churches and convents, and the fort, or castle, which is about a musket-shot from the town; but it is now much reduced. Mr Salt stated the population in 1809, at 500 Portuguese, 800 persons of Arabian extraction, and 1500 negroes. The trade is in gold, ivory, and slaves. The fort is one of the strongest and best contrived which the Portuguese have on this coast. The kings of Portugal spared no cost to fortify and garrison Mosambico, and to provide it with an hospital for the sick, and a well-stored magazine, with all necessaries for shipping, though the charge of keeping them up often exceeds the revenues it affords. Lon. 41° 38′ E.; lat. 15° 5′ S. The island of Mosambico, though the largest of the three islands, is nevertheless very small, not being above two bowshots in breadth, and about six in length; about two miles from the continent. The bay is about three miles in circuit, so that the points of land on each side advance into the sea. The other two, St George and St James, lie on each side of it, facing the continent in a direct line with it. Over against that of St George, and about a mile from it, is the cape called by the Portuguese *Cabo Cetra*, which is a peninsula, joined to the continent by a small neck of land, covered with the sea at high, but fordable at low water.

MOSAMBIQUE, Straits of; that part of the Indian ocean which divides the island of Madagascar from the continent of Africa.

MOSCATI, Pietro, a celebrated physician and statesman, son of one of the most celebrated surgeons in Italy, was born in 1736, at Milan. As his talents were obvious at an early period, his father cultivated them with the utmost care, and at length sent him to Tuscany, and afterwards to Turin, to study under the direction of Bertrandi and Beccaria. Moscati, after having taken his doctor's degree at Pavia, was appointed assistant physician to the hospital at Florence, where, and at Bologna, he diligently laboured in the acquisition of professional knowledge. In 1764, he was elected professor of anatomy and surgery in the university of Pavia, and published his anatomical lessons, and a Discourse on the physical Differences which exist between Man and Animals. Both of these works were well received, and the latter was translated into German.

In 1772, Maria Theresa nominated him professor of midwifery-surgery, and placed him at the head of a foundling establishment which she had formed. In 1796, Moscati espoused the cause of Italian liberty, and became a member of the Cisalpine congress. In 1797, Bonaparte selected him as one of the fittest persons to be a director of the Cisalpine republic; and, when Moscati wished to decline the office, the general replied to him, "If honest men refuse, I must appoint knaves." Moscati therefore accepted it; but he soon resigned, and resumed his medical pursuits. He was arrested by the Austrians, in 1799, and confined in the fortress of Cattaro, where, however, he was liberated to attend on the archduke Charles, who had fallen ill. After the battle of Marengo, he returned to Italy, and was one of the deputies sent to the *consulta* at Lyons. Under the government of Napoleon, he was successively made director-general of public instruction, a senator, a dignitary of the iron crown, grand eagle of the legion of honour, and a count. He was also highly respected at the vice-regal court, and was the favourite physician of the viceroy and vice-queen. Moscati was sincerely attached to Eugene Beauharnais, and was one of the senators who was the most active, in 1814, in endeavouring to raise him to the throne. He was afterwards one of the directors of the Italian institute, and president of the central council of health. He founded, at his own expense, a meteorological and astronomical observatory. In private life, he was universally esteemed for his many virtues, and the affability of his manners. He died in 1824.

MOSCHUS, a Greek pastoral poet, was a native of Syracuse. The time when he flourished is not accurately known, some making him a pupil of Bion, who is supposed to have lived under Ptolemy Philadelphus, while others suppose him a contemporary of Ptolemy Philometer (B. C. 160). The tenderness with which he speaks of Bion, in his beautiful elegy on that poet, implying a personal acquaintance, seems to render the former opinion most probable. A few idyls form the whole of the remains of Moschus, which exhibit great elegance of style and delicacy of conception. They are generally printed in conjunction with those of Bion (q. v.), and may be found in the *Poetæ Minores*, as also in a separate volume, by Mekercke.

MOSCOW (*Moskwa*); on the Moskwa and Neglina, in a fertile and richly cultivated country; lat. 55° 45′ 45″ N.; lon. 37° 33′ 8″ E.; the ancient capital of the Russian empire, and still the place of the emperor's coronation. It was also the imperial residence, till Peter the Great selected Petersburg for this purpose. Moscow was founded by the grand-duke Jurge I., in 1147, and enlarged by the grand-duke Daniel, about the year 1300. In 1383 and 1571, it was entirely destroyed by the Tartars, but each time soon rebuilt. A third time, 1611, it was burned by the Poles. The plague has also often produced a great mortality there; the last time, in 1771. In 1831, it was severely afflicted by the cholera morbus. Under Catharine II., Moscow was extended and embellished. It comprised, in 1812, in a circuit of about twenty-seven miles, five principal divisions: 1. the Kremlin (q. v.), that is, fortress; 2. Kitaigorod; 3. Beloigorod, with the buildings of the university, founded by the empress Elizabeth, in 1755; 4. Semlanoigorod, and, 5. thirty Sloboden, or suburbs. The town contained above 10,000 houses, among which were 288 churches. There were also numerous booths, and 350,000 inhabitants (20,000 of the number, soldiers), several imperial colleges, institutions for education and sciences, a large foundling hospital for 5000 children, and also the principal manufactures of the empire. Moscow has been, and still is, the centre of the trade of the interior, and a mart for enormous stores of goods of every description. This and the palaces and luxury of the high Russian nobility, who are here less dependent on the court, and principally pass the winter in this place, make it one of the largest and most magnificent cities of the world. The peculiarities of the national customs and character remained longer here than in the other cities. Recent times have given it great historical interest.

Moscow was the torch which lighted the fire of independence through subject Europe. When Napoleon advanced, in 1812, with the most numerous army which Europe had seen since the great migration of the nations, into the interior of the Russian empire, and her armies had in vain attempted to stay his course at the Moskwa (q. v.), near Borodino, Kutusoff determined, in spite of the opposition of many members of the council of war, to sacrifice the city in order to save the empire. The stores from the arsenal, together with the public treasures, had been already transported from Moscow, and secured. The greater part of the inhabitants followed, with their movable property; 17,000 wounded were conveyed in 4000 wagons, leaving only 2000 severely wounded and sick in the hospitals of Moscow. The army retired to Kaluga. (See the article *Russian-German War*.) The governor of Moscow, in the mean time (count Rostopschin) prepared to prevent the enemy from maintaining himself in the heart of the empire. He set fire to his beautiful country seat, near Moscow, and others, equally determined not to see their property in the hands of the enemy, did the same; and many citizens loudly exclaimed, that it would be better to burn Moscow than to give it up to the French. But count Rostopschin could only effect the departure of all the civil and military authorities, together with the officers of the fire-department, and 2100 firemen, with ninety-six fire-engines. These, as belonging to the military, were despatched from Moscow a day before the entry of the enemy. The prisons were not opened, but cleared, and 810 prisoners were conveyed to Nishnei-Novogorod, under an escort, two days before the arrival of the French. But half of the inhabitants remaining at Moscow (12—15,000) were a mere mob, many of whom may have profited by the universal disorder, to set fire to several houses that they might the better plunder. The conflagration of Moscow, which, in the course of three days, consumed three-fourths of all the houses, was, according to universal opinion, not accidental, but a preconcerted plan, and the order of count Rostopschin. The latter repelled the charge in his work *La Vérité sur l'Incendie de Moscau, par le Comte Rostopchine* (Paris, 1823), and contradicted the reports of the French army, disclaiming the honour of this great act; but he acknowledged that incendiaries had been taken in the act by the French, who had firebrands and rockets about them. According to the printed reports of the examinations, thirty persons were arrested by the French, thirteen of whom were shot, being convicted of having put fire to different parts of the city, by Rostopschin's command. It is known that the owners of the magazines of wagons, who occupy a whole street in Moscow, when they saw that the French officers, immediately on their arrival, had taken possession of these carriages, unanimously put fire to them, the following night, rather than see their property in the enemy's hands. Rostopschin also names many merchants who did the same with their houses, some of whom were surprised in the act, and immediately shot. Some of the French may also have been accessary to the conflagration, from carelessness, or for the sake of plundering. In the first night after the arrival of the

French, the large warehouses in the neighbourhood of the Kremlin were in flames; then the fire broke out in several parts of the city. The fifth day after the French had entered, a high wind carried the flames in every direction; so that, in the course of three days, 7932 houses were consumed to ashes. Napoleon having given permission that those houses which were on fire might be plundered, the soldiers did not exert themselves in subduing the flames. The Russians at that time maintained that the conflagration was entirely the work of the French, which added to the exasperation of the people. Even Kutusoff declared to Lauriston that he had only given orders to destroy several magazines. The rest had been done by the French. The following circumstances attended the entry of the French: Napoleon waited in vain for messengers to deliver to him the keys of the city. At last, a deputation appeared, consisting of twelve badly-dressed persons of the lower orders. Napoleon therefore did not attend to them. A young Russian, who had conceived the idea of issuing a proclamation in the name of Napoleon, was killed by the people. When the advanced guard of the French entered Moscow, Sept. 14, and proceeded to the Kremlin, a Russian peasant suddenly sprang forward, and killed a Polish officer, whom he had taken for Napoleon. Some of the citizens prepared to defend the Kremlin; but Murat brought forward his cannon, and they fell a sacrifice to their despair. On the fifteenth, at three o'clock in the afternoon, Napoleon entered with his guards, and took up his abode in the Kremlin. But volleys of smoke soon rose at a distance, and the flames proceeded from five hundred different quarters. The attempts to extinguish the flames and restore order were fruitless. All Moscow was on fire. It being impossible to subdue the conflagration, Napoleon left the Kremlin, and retired to castle Petrowskoi, a league from the city. His last words were, "Where you cannot extinguish, plunder!" Horrors upon horrors now succeeded: Moscow was burning till Sept. 21. At last, order and tranquillity were restored, on the first of October: but the "holy city" thus destroyed roused the people to vengeance against the French; and the army, in the midst of plundered treasures, was soon deprived of the very necessaries of life. Of 150,000 soldiers who had entered Moscow, Napoleon, in five weeks, had lost 40,000: thus retreat became unavoidable. From the 19th to the 22d of October, preparations were made for retiring, which were accompanied by new acts of ferocity and avidity, On the last day, it was resolved to destroy the Kremlin; but this only partly succeeded. Of 2600 stone houses, but 525, and, of 6600 wooden buildings, only 1797, were preserved. The entire loss which the fire and the war occasioned to the city and the government of Moscow, was estimated at 321,000,000 of roubles. The Russian government appointed a commissioner to make indemnification; but many of the inhabitants, who had lost the greater part of their property, did not hand in their estimates; thus, for instance, the loss of the two counts Razumowski, of general Apraxin, count Butterlin (whose library, worth a million, was entirely destroyed), and of general Rostopschin, amounted to five millions of roubles, in houses and furniture.

After the recovery of the country, the Russians were so actively employed in rebuilding Moscow, that, in the course of nine years, it had risen from its ruins in greater beauty than before the conflagration. The houses are principally of brick; the streets are paved with pebbles, and bordered with foot-paths; fifteen main streets diverge from the centre, terminating at the fifteen barriers; the principal squares are those of Loubianka, and of the poultry market, near the centre of the city; the number of streets is 765; houses, 10,000, of which 8027 have been built since the conflagration of 1812; cathedrals 7; churches and chapels, 275, and 1 mosque, 21 monasteries, 56 hospitals, &c. The imperial university has a library of 33,000 volumes: the course of instruction includes the moral and political sciences, physics, mathematics, medicine, and polite literature. Several learned societies are connected with it. There are numerous other literary institutions. Some of the hospitals are very extensive, particularly the military hospital, with 1900 beds, which received 11,650 patients in 1823. The population, in summer, is 246,545, and, in winter, receives an increase of 150,000.

MOSELLE; a department of France. See *Departments.*

MOSELLE, or MOSEL (anciently *Mosella*), a tributary of the Rhine, rises in France, in the Vosges, and flows into the Rhine at Coblentz, opposite to Ehrenbreitstein. It runs through the French departments of the Vosges, the Meurthe, and the Moselle, the southern part of Luxembourg, and the Prussian province of the Lower Rhine. The length of its course is about 300 miles. Its principal tributaries are the Meurthe and the Saar. From Metz to Treves, it has a broad valley, but, below the latter place, it is confined by the branches of the Hundsruck. The mean breadth is about 500 feet; depth, seven to fifteen feet. The navigation is tedious, on account of the winding course of the river, and, in some parts, is difficult and dangerous. From Treves to Coblentz, the scenery on the river is very picturesque, almost every village and every group of hills presenting a beautiful landscape. The neighbourhood of Trarbach is charming; mountains, vine-clad hills, fertile valleys, interchange with each other, and several brooks run into the Moselle. The principal towns on its banks are Pont-à-Mousson, Metz Thionville, Treves and Coblentz. Wood for fuel and building, coal, iron, slates, wine, grain, &c., are brought down the river in large boats, eighty feet in length by twenty in breadth.

MOSELLE WINES; a sort of clear and dry wines, with a light, pleasant flavour and high aroma, produced in the countries on and near the Moselle. They are generally only first rate ordinary wines, but are sometimes of a superior quality. They come to maturity in about five or six years, but in a favourable season, they will keep twice that time without deterioration. The best are produced at Braunenberg, Graach, Wehlen, Zeltingen. The Pisporter, Drobner, and Neumagner are also esteemed. They are now much used in Prussia, on account of the high duties on foreign wines. The Moselle wines are often recommended for their diuretic qualities, and as preventive of obesity.

MOSES was born in Egypt, about 1600 B.C., among the then severely oppressed Hebrew people. Three months after his birth, his father, Amram, and mother, Jochebed, both of the race of Levi, were obliged to expose him, in obedience to a royal command, which enjoined that all the male children of the Hebrews should be put to death. But the daughter of the Egyptian king (a tradition preserved by Josephus names her Thermutis), going to bathe in the Nile, found the child exposed in a carefully constructed basket of bulrushes upon the border of the river, and took compassion upon him. His sister Miriam, who was standing near, offered to procure him a nurse, and immediately summoned his mother. The feelings of his unhappy people were therefore instilled into him with his mother's milk, and he returned, when he had reached a fit age for instruction, to the king's daughter, who named him *Mo-udsche* (whence the Hebrew *Mocheh*), signifying one delivered from the waters, and adopted him as her son. He was afterwards educated for the duties of the priesthood, to which the royal family belonged, and could now, as the disciple of the priests, attain to all the arts and knowledge which this privileged caste carefully confined within the limits of their order. The means of instruction thus afforded him were the best which his time possessed; and Moses penetrated still deeper than his instructers into the secrets of their religion, physics, legislation, and government, as appears plainly from his words and actions. His expedition into Ethiopia, in the fortieth year of his age, as leader of the Egyptians, when he subdued the city of Saba, won the affections of the conquered princess Tharbis, and married her, rests only on the tradition preserved by Josephus. Yet Moses could not forget his people in the splendour of a court: an outrage committed by an Egyptian on a Hebrew excited his anger, and he secretly slew the Egyptian. But this deed became known, and he escaped the pursuit of the king only by a hasty flight into Arabia. Here he took refuge with Jethro, a Midianitish prince and a priest, and espoused his daughter Zipporah, whom at their first meeting, he had rescued from hostile shepherds. Thus the adopted son of a king's daughter became the herdsman of an Arabian, and history does not say that he aspired to any thing greater. But the misery of his nation must have been continually present to his mind, and not in vain had he been led, by extraordinary means, into the sanctuary of Egyptian wisdom, and endowed with the rarest powers and knowledge. This knowledge occupied his mind in his solitude, and explained to him the secrets of nature, whose mysteries and wonders addressed him in a solemn tone amid the deserts and mountains of Midian, and elevated his heart to that God whom he discerned more clearly than his fathers. Yet the germ of his great undertaking remained for a long time maturing in his mind, before it was brought to light, and assumed the form of a deeply-meditated plan. Moses had already attained to an age which gives mature experience, patience, and tranquillity of mind, when this took place through an immediate interposition of God. While he was feeding his flock on mount Horeb, he saw a bush on fire, and, considering why the bush was not consumed, he heard the voice of the Lord proceeding from it, who announced himself to him as the God of Abraham, Isaac, and Jacob, and commanded him to lead his people out of Egypt into the land which he had promised to the patriarchs. The name *Jehovah*, by which God declared himself, was already known to him by means of the Egyptian mysteries, and conveyed the idea of the one, everlasting and unchangeable. But not without anxiety, arising from the view of the difficulties which he should meet with, and from his modesty, did he determine to obey this call. Pharaoh, he thought, is hard and unbelieving, he himself outlawed, his people rude, and incapable of comprehending the idea of the God whom he should announce to them. Being slow of speech, and possessing none of the arts of an orator, his words will not be believed without visible signs. God therefore gives him power to prove his mission by miracles, and joins to him his elder brother, Aaron, as a speaker. Thus prepared, Moses becomes confident that he shall succeed, with the assistance of God, and returns to Egypt, a gray-haired man of eighty years, to undertake the work. All the difficulties which he had foreseen, and yet greater ones, opposed him. He had the eloquence of Aaron, it is true, to aid him, and the people of Israel must recognise the hand of God in his deeds; but, degraded by long slavery, they wavered between belief and doubt. In vain did he produce changes in the ordinary course of nature, which could not be imitated by the art of the Egyptian sages, and for the performance of which a higher power was obviously requisite. The tenth of the destructive plagues which afterwards came upon Egypt—the destruction of all the first-born—first moved the hardened heart of Pharaoh to allow the Hebrews to depart. Moses placed himself at their head, and conveyed them, with all their possessions, out of Egypt, passing, under the protection of God, through the midst of the Red sea, in which the faithless Pharaoh, pursuing them, was drowned, with the army which followed him. Yet this deliverance from a formidable enemy was only the beginning of his enterprise. A rude, tumultuous people was around him, who, until now, had obeyed the scourge of their task-masters, but knew not how to live in freedom. Their distress in the desert excited loud murmurs; their meeting with the hostile Bedouins occasioned bloody combats; the jealousy of the elders produced dissensions and opposition to their leader; his life was often in danger, and he was often obliged to maintain his authority by force and severe punishments. But, with wonderful wisdom, he remained firm, in spite of all opposition, to his plan of transforming the stubborn multitude into a devout, civilized, and independent people. He supplied the hungry with food from heaven, and, opened to the thirsty new fountains upon the rock of Horeb, by the aid of God, who granted to his petition what the people needed. In all his ordinances, he declared himself to have the express command of God, who wished to draw his people to himself, and to form their hearts by love and fear. Religion is the spirit of the law which Moses began to announce three months after his departure from Egypt.

Arrived at Sinai, a mountain of Arabia, he allowed the people to encamp, while he himself ascended the holy summit to pray, where, surrounded with thunder, and trembling at the presence of God, the laws were announced to him which were to regulate the lives of the Israelites. Founded upon the faith of the patriarchs, these laws are rather a restoration of the simple truths which had governed the primitive world than a new religion. As presented by Moses, they were purified from the errors and follies of superstition, which had gathered round them among idolatrous nations, and were exhibited in a form adapted to the wants of the Hebrews, who had grown from a single family to a rude, ungoverned multitude. The great object of his legislation is to inculcate the doctrine that Jehovah is the only God, who will allow no other god besides himself, nor any visible image of his being; that he is himself the King of his people, and that he will rule them by his priests: hence the laws by which Moses regulates the worship of the Hebrews, the administration of the government and of justice, and even directs their manners, and lays down rules for the care of their health, bear the marks of their heavenly origin. Arising from the wants of the moral and physical nature of man, they are excellently adapted to the peculiar character of the people, to the climate, and to the political position of the land appointed for their dwelling, and to the plan of Providence of making this people the depositary of a divine revelation, to be developed in the fulness of time, and finally extended over the world. These laws forbid intermixture with other nations, the introduction of foreign customs, and the adoration of strange deities. As a people peculiarly dedicated to God, the Hebrews were to be separated from all neighbouring nations, and to stand separate and independent, relying upon God as their Lord and Master. Regulations, extending to the minutest particulars of the daily occurrences of life, in which even the selection and preparation of their food, and the care of personal cleanliness, were not forgotten, gave them habits adapted to their character and religious destination. A ritual, composed of a thousand minute ceremonies, and, as a whole, allegorically designating a covenant with God, to be incessantly renewed by offerings, prayer, and purification, imposed on them the duty of continual diligence in the service of their heavenly King. To the race of Levi, to which Moses belonged, he assigned the care of the religious service, and of seeing that the laws were obeyed, investing, not his sons (whom he allowed to take their place among the common Levites), but the descendants of his brother Aaron, as God commanded, with the first office in the kingdom,—that of high-priest. To this tribe, excluded from all property in land, the other tribes were to pay tithes: they were subjected to the authority of elders and judges, and the firmness of their political union was secured by certain festivals, to be celebrated by them in common, and by exclusive devotion to the service of God in the tabernacle,—a movable temple, regarded with awe, as the appointed dwelling of Jehovah, into the interior of which the priests alone were allowed to enter, and where, moreover, all the taxes were deposited, so that it was the central point of all the riches of the nation.

These are the chief points in the legislation of Moses, which, even if it displays some Egyptian features, yet plainly manifests the endeavour to wean the Hebrews from Egyptian customs and prejudices, and to elevate them to political and religious independence, and far surpasses, in originality and elevation of principle, in consistency and expressiveness, and, what most proves its heavenly origin, in proofs of true humanity, the boasted legislation of Solon and Lycurgus. Yet its importance was not at once recognised by the Hebrews.

When they were already near the end of their journey towards Canaan, Moses saw himself compelled, in consequence of new evidences of discontent, to lead them back into the desert, and forty years of toilsome wandering must be passed there: the severe punishments which the law threatens against transgressors must be executed in all their rigour: all those who had attained to man's estate at their departure from Egypt must die, before the law could be thoroughly known, and become habitual with those who had been born during the wandering. Moses himself, distressed with cares, troubles, and occupations of all kinds, was not permitted to live to see the complete accomplishment of his plan, on account of a murmur which, in the midst of his distresses, he allowed to escape against his God. After he had appointed Joshua to be the leader of the Hebrews, and had taken a solemn farewell of the people, he ascended a mountain in Peræa, beyond Jordan, from which he surveyed the land of promise, which he could not enter, and closed his eventful life in his 120th year. He prevented all superstitious reverence for his bones by his command, that his remains should be buried secretly, and the place of his grave concealed from the people.

The books which stand under his name at the head of the Old Testament are the monument of his worth. As it has been supposed that the material upon which he wrote was stone, and as it was hardly possible for works of the size of the Mosaic to be written at length on such a material, critics have attributed their collection, and arrangement in five books (whence their name, in Greek, *Pentateuch*), to a later writer, of the time of David or Solomon. But M. Greppo, in his essay on the hieroglyphic system of Champollion) translated by Isaac Stuart, Boston, 1830), maintains that Moses might have written on papyrus, and refers to an Egyptian manuscript on papyrus, in the museum at Turin, containing an act drawn up in the reign of Thouthmosis III., two centuries at least before Moses; and it is generally admitted that much must have been written by him, as the laws, which he could not trust to uncertain tradition, in the books of Leviticus and Deuteronomy. It is equally certain that he is the author of the magnificent songs, in which he celebrates the deliverance of the Israelites from the Red sea, and blesses and takes leave of the people before his death. The collection of the several portions of his writings into a whole, may be the work of a later time, which cannot be fixed within more precise limits than those above-mentioned.—See Michaelis's *Introduction to the Scriptures of the Old Testament* (in German); Astruc's *Conjectures upon the original Sources from which it appears that Moses composed the Book of Genesis* (in French, 1753); De Wette's *Contributions to the History of the Old Testament* (in German, Jena, 1804); Vater's *Commentary upon the Pentateuch* (in German, Halle, 1805); Eichhorn's Augusti's Berthold's *Introductions to the Old Testament* (in German); Faber's *Horæ Mosaicæ, or Dissertations on the Pentateuch.*

MOSES; a sort of boat. See *Boat.*

MOSES, Choronensis, an historian and geographer, and archbishop of Chorene, now Kerona, in Armenia flourished about A. D. 462. (See *Armenian Literature.*) His principal work, a History of Armenia, from the Deluge to the Middle of the fifth Century, was first published with a Latin version, by John and William Whiston, in 1736, and, though mixed up with a great deal of fable, is a valuable history, containing many narratives not elsewhere to be found. He was also the author of an Abridgment of Geography, first published at Amsterdam, in 1668, and several canticles, which are sung in Armenian, on the anniversary of Christ's presentation to the temple.

MOSHEIM, Johann Lorenz, one of the most distinguished German theologians, was born at Lübeck, in 1694, studied at Kiel, and, in 1719, became a member of the faculty of philosophy there. His reputation as a teacher, writer, and preacher, soon procured several flattering offers of promotion, which he declined; but, in 1723, he accepted the place of professor of theology at Helmstädt, where he was soon after (1726) made ecclesiastical and consistorial counsellor, and abbot of Marienthal and Michaelstein. With these places he also held that of inspector-general of the schools in the duchy of Wolfenbüttel. In 1747, he was appointed chancellor of the university of Gottingen, where he remained till his death in 1755, lecturing daily on ecclesiastical history and most other departments of theology. Dr Mosheim was the father of ecclesiastical history. His principal work on this subject is the *Institutiones Historiæ Ecclesiasticæ, Libri iv.* (Helmstädt, 1755), which was afterwards published under various other forms, and translated into German, with additions; also into English, by doctor Maclaine. His *Sittenlehre der heiligen Schrift* (5 vols., 1573), continued by Miller (4 vols.), is valuable for its completeness, and for its practical character. In the department of pulpit eloquence, he rendered important services by his *Anweisung erbaulich zu predigen*, and by his *Heilige Reden*, and is considered by the Germans the father of sacred eloquence in Germany, and an improver of German didactic prose.

MOSKWA, Battle of the (called by the Russians the *battle of Borodino*, from the village of that name, on which their right rested); gained by Napoleon, September 7, 1812, over the Russians under Kutusoff, who had taken the command August 29. The Russian commander took his position, September 1, at Borodino, with the purpose of defending the capital against the advancing enemy. The Russians occupied a gentle rising on the left bank of the

Caluga, from the confluence of that river with the Moskwa to the wood through which the Kaluga road passes: their right wing was covered by the village of Borodino, situated on a height on the left bank of the Kaluga: 2000 paces to the left, in the rear, was a large redoubt. The left rested on a wood at the village of Seminovska, and was covered by works thrown up in front, and connected with the centre by a redoubt. The centre was covered by a ruined village. Works were also thrown up to cover different parts of the position. Barclay de Tolly commanded on the right, Bennigsen in the centre, and Bagration on the left. On the fifth, Napoleon, having reconnoitred the Russian position, took possession of the redoubt in front of the left wing, previous to a general attack. The attack began early in the morning of the seventh. The French, after making an impression with their artillery and musketry, marched forward to a simultaneous attack on particular points. Success was most doubtful in the centre, where the Russians at one time recovered the great battery, after it had fallen into the hands of the French, and drove them back with great slaughter; but the failure of the Russian left enabled the enemy to throw a mass of force upon the point, which could not be withstood. The French had first got possession of the batteries by eight o'clock, but the fighting continued till late in the afternoon. The Russians retreated in good order, and without loss, no pursuit taking place. The French force amounted to about 150,000 men; the Russian was somewhat less; 50,000, dead and dying, covered the field. The Russians acknowledged a loss of 25,000 men, among whom was Bagration. Murat, Ney, and Eugene Beauharnais, distinguished themselves. See *Russian-German War*, and *Ney*.

MOSQUE (*medsched*); a Mohammedan house of prayer. These buildings are constructed in the Moresque or Saracenic style of architecture (see *Architecture*, vol. i., p. 234), and display, in unceasing variety, all the peculiarities, both ornamental and unornamental, of that rich and superb style. The mosques of the Arabs often include, in a quadrangular area, an immense quantity of columns ranged in files, the multiplicity and extent of which impress the mind of the beholder with surprise and admiration. These columns are, in numerous instances, the rich spoils of antique monuments. Upon the site (it is said) where formerly stood the famous temple of Solomon, a superb mosque has been erected at Jerusalem. If the Arab temples astonish by their huge extent and prodigious colonnades supporting their arches and vaults, those of the Turks possess another kind of claim to notice and admiration in the grandeur and height of their various cupolas. Every province of Turkey has its own particular style and taste with regard to these religious structures; and, as the Moresque architecture possesses no fixed rules, deeming lightness and elegance alone to be the fundamental laws of the art, the architect is allowed to follow the bent of his own fancy freely. In these Mohammedan churches we find neither altars, nor paintings, nor images, but a great quantity of lamps, of various kinds, which form the principal interior ornament, and some sentences from the Koran written on the white walls. Every mosque has its minaret or minarets (q. v.). The mosques are quadrangular, and have fountains in the court for ablutions. The entrances are hung with chains in such a manner that no one can enter without stooping. The floor is generally covered with carpets, but there are no seats. In a corner on the south-eastern side is a chair, on which the iman is seated when he reads the prayer. In the direction towards Mecca is a tablet, or recess in the wall, in which are usually some copies of the Koran, to direct the worshippers where to turn their eyes:—this is called the *kebla*. The *dshamis* differ from the mosques. In the former, the divine service on Friday, as well as the prayer for the emperor (*kutba*), is held. The finest of the mosques in Constantinople is that of St Sophia. Usually none but Mohammedans are permitted to enter a mosque; but to this there are exceptions. Thus the mosque of St Sophia, by an ancient custom, was open to every Venetian ambassador for a fee of some ducats, and also to others. The imperial mosques have frequently public schools (*madras*), hospitals (*imarets*), and also kitchens for cooking food for the poor. Their income is derived from certain districts and estates, whose inhabitants enjoy great privileges.

MOSQUITO. See *Gnat*.

MOSSES (*musci*); a natural family belonging to the *cryptogamia* of Linnæus, consisting of little herbaceous plants, having simple or branching stems, which are furnished with very numerous and more or less imbricated leaves; the roots are capillary, annual, or perennial; the leaves are small, simple, sessile, embracing the stem, and entirely or minutely serrated on the margin: they are always continuous with the stem, and never fall off. Water is absorbed by the leaves very rapidly, and when a dried moss is dipt in water, it very soon resumes the freshness and appearance of life. It is to be observed, however, that those parts only which are moistened resume their wonted vigour, while the remainder continues dry, as before. The internal structure of mosses is entirely cellular, and they are destitute of stomata. Their parts of fructification are double, terminal or axillary, on the same or on different stems. The female flower consists of a sort of urn, situated upon a long pedicel, closed above with a lid, and covered with a sort of hood or veil: the lid is usually deciduous; and when it has fallen, the internal border of the urn is seen to be provided with one or two membranes, which terminate in regular teeth, the whole appearing like a fringe. In one genus the teeth are wanting; but when present, they are always in number four, or one of its multiples. In some instances, the teeth are divided half way by a fissure. The seeds are very small, globular, exceedingly numerous, and reddish or brown at maturity: according to Hedwig, they are attached to the sides of the urn. Mosses are found in cool, airy, and moist situations, in woods, upon the trunks of trees, on old walls, the roofs of houses, &c. They grow in tufts, forming carpets which often cover a considerable extent of ground. Some of them are entirely aquatic. About 800 species are known, which are now distributed into several genera. They are most numerous in the temperate parts of the earth, and especially in mountainous regions. From the situations in which they are found, they are frequently exposed to be dried up during the summer; but a slight rain quickly restores their usual freshness. The term *moss* is often, but improperly, applied to lichens.

MOSSOP, HENRY; an eminent tragic actor, born in Ireland, in 1729. He was the son of a clergyman who held a rectory in the province of Connaught, and was educated at Trinity college, Dublin, where he took a degree. He made his first appearance on the stage at Dublin. He afterwards removed to London, where, next to Garrick and Barry, he was esteemed the principal tragedian of his time. In 1761, he became manager of one of the Dublin theatres, in opposition to Barry and Woodward; and the rivalry proved ruinous to all parties, and especially so to Mossop, whose vanity and intemperate conduct having at length excluded him from the exertion of his professional abilities on the metropolitan stage, he was reduced to great distress, and died in absolute penury, at Chelsea, in November, 1773.

MOSS-TROOPER; the usual appellation (says Scott, note thirteen to canto first of the Lay of the Last Minstrel) of the marauders upon the borders of England and Scotland. Long after the union of the crowns, the moss-troopers, although sunk in reputation, and no longer enjoying the pretext of national hostility, continued to pursue their calling. Fuller says, "They are called *moss-troopers* because dwelling in the mosses, and riding in troops together. They dwell in the bounds or meeting of the two kingdoms, but obey the laws of neither. They come to church as seldom as the 29th of February comes into the calendar. They are a nest of hornets; strike one, and you stir all of them about your ears. Indeed, if they promise safely to conduct a traveller, they will perform it with the fidelity of a Turkish janizary; otherwise, woe be to him that falleth into their quarters." Speaking in reference to his own time, he says, "They amounted, forty years since, to some thousands. They compelled the vicinage to purchase their security by paying a constant rent to them. When in their greatest height, they had two great enemies, *the laws of the land, and the lord William Howard of Naworth.* He sent many of them to Carlisle, to that place where the officer *doth always work his work by daylight.* Such was the success of this worthy lord's severity, that he made a thorough reformation among them; and, the ringleaders being destroyed, the rest are reduced to legal obedience, and so, I trust, will continue." (Fuller's *Worthies of England,* page 216.) The last public mention of moss-troopers, says Scott, occurs during the civil wars of the seventeenth century, when many ordinances of parliament were directed against them.

MOSTARABS. See *Arabia.*

MOST CHRISTIAN MAJESTY; a title borne by many kings of France, as by Pepin the Short, but which was first solemnly conferred on them by pope Paul II., in 1469. According to some, pope Pius II. gave this title to Louis XI., to atone for his refusal of the request of that king that, as *suzerain* of Naples, he would assist prince John of Calabria, the kinsman of Louis, against Ferdinand of Naples.

Most Faithful Majesty is a title which was given by Benedict XIV. to John V. of Portugal.

MOSUL, or MOSSOUL; a city of Turkey in Asia; capital of a pachalic included in the pachalic of Bagdad, in a plain on the west bank of the Tigris; 240 miles east of Aleppo, 480 west-north-west of Ispahan; lon. 42° 8′ E.; lat. 36° 20′ N.; population, according to Oliver, about 70,000; 25,000 Arabians, 16,000 Turks, 15,000 Kurds, 8000 Armenians and Nestorians; according to others, 35,000. It is surrounded with walls and ditches, and defended by a castle. Almost all the houses are built of stone. The Tigris is deep and rapid, and is crossed by a bridge of boats. The air is healthy in spring, hot in summer, feverish in autumn, and inconveniently cold in winter. The inhabitants consist of Arabians, Turks, Persians, and Kurds, all which languages are spoken. The Nestorian patriarch of Syria resides at Elkasch, near the town, where also are found many Christians, Armenians, Greeks, and Maronites. This city is very large, and contains many handsome buildings, exclusive of mosques, minarets, and hummums, which are of hewn stone. The bazar is large, and well supplied. The commerce is considerable, and there are manufactures of leather and cotton, particularly *muslins*, said to be named from this place. The town is surrounded by a strong and high wall of stone, but all the space enclosed is not occupied with houses, and many places are covered with ruins, which show that it was once more populous than it now is; however, the inhabitants carry on considerable manufactures of cotton. Merchandise from India is brought hither by the way of Bassora, and European goods by the way of Aleppo. About a mile from Mosul, on the opposite bank of the river, are mounds, similar to those of Babylon, supposed to be the remains of ancient Nineveh.

MOTANABBI, Abul Tayib Ahmed al; a celebrated Arabian poet, born at Cufa in 915. He studied at Damascus, and applied himself especially to grammar and the belles-lettres. At length, being inflamed with a passion for poetry, he gave himself up to the cultivation of that species of literature with the utmost enthusiasm, and professed to believe that he was divinely inspired. He aspired to become the rival of Mohammed, and, by the charms of his versification, seduced a multitude of the Arabs to become his disciples. The governor of Emesa stopped the progress of the new sect, by seizing their chief, and dispersing his followers. Motanabbi, reduced to reason by confinement, renounced his chimerical pretensions to inspiration, and, on regaining his liberty, applied himself wholly to poetical composition. He was entertained at the court of the prince of Aleppo, whence he removed to Egypt, and afterwards to Shiraz, where he was loaded with benefits by the sultan Adadodowla. He was at length killed by robbers in crossing the desert to visit his native country, in 965. A memoir of Motanabbi, with two of his poems, may be found in Ouseley's Oriental Collections. His Divan (q. v.), a collection of 289 poems, has exercised the industry of more than forty commentators. Von Hammer first gave a complete translation of them (Vienna, 1824), with notes. He was called in the East, the *sultan of poetry.* See *Arabian Literature.*

MOTET (from the *French*) formerly signified a studied composition enriched with all the beauties of the musical art. At present, the name of *motet* is given to every composition set to Latin words; such as hymns, psalms, or any small portion of scripture, in the Roman Catholic church. In Germany, the name is given to figured musical pieces, generally intended only for singing, the subjects of which are passages of the Bible. There are some for four, five, six voices. The motets of France and Italy are always accompanied by instrumental music. The subjects are also passages of the Bible, generally in rhymed Latin verses, whilst the words of the German *motet* are in prose. The German *motet* is chiefly confined to the Protestant part of Germany. The two Bachs (q. v.) may be said to have carried the German *motet* to its highest point.

MOTH (*phalæna*, L.). These numerous and beautiful insects, which are seldom seen except in the evening or night, were included by Linnæus in the genus *phalæna.* Since his time, however, naturalists have divided them into an immense number of different groups. (See *Entomology.*) All the diurnal butterflies are provided with a tongue for gathering their food; but a great proportion of the moths are destitute of that organ, whilst in others it is exceedingly small. A considerable number of them, therefore, must pass the whole of their winged state without food. The caterpillars, from which the various species of the perfect insects are produced, exhibit nearly the same variety of appearance as the moths themselves. Some are large, and others extremely minute; many are furnished with ten, others with twelve or fourteen feet, whilst the largest have sixteen. All these caterpillars, after having shed their skin one or more times, spin for themselves the materials of a habitation, in which they are to undergo their transformations.—The most remarkable and useful of these caterpillars is the silk-worm (q. v.), originally a native of China and other Eastern countries, from whence it was imported into Europe during the reign of the emperor Justinian. If, however, one species ministers to our comfort and luxury, there are others which are capable of committing great devastations among all articles composed of woollen or fur, &c. Thus the *tinea sarcitella* destroys woollen clothes; the *T. pellionella* attacks furs; the *T. flavi-frontella* damages collections of natural history; the *T. granella* commits great ravages among grain, &c. The clothes-moth itself is perfectly innocuous. The devastation is committed by the caterpillar. This begins to form a nest as soon as it quits the egg. For this purpose, having spun a thin coating of silk round its body, it cuts filaments of wool or fur close to the thread of the cloth, and applies the pieces to the outside of its case. This covering it never leaves, except in cases of urgent necessity. When it wishes to feed, it puts out its head at either end of the case, as may be most convenient. When it wishes to change its position, it protrudes its head and about half its body, and thus moves forward, dragging its case by fixing its hinder legs firmly in it. When, from its increase in size, the case becomes too small, it makes an addition to it at each end. This operation can be readily traced by transferring it from cloth of one colour to another, when each addition will be conspicuous, from the difference of colour. After changing into a chrysalis, it remains quiescent for about three weeks, when a small nocturnal moth, of a silvery-gray colour, comes forth, but too well known to almost every mistress of a family. The usual mode of destroying these pests is by oil of turpentine, camphor, or tobacco, all of which will answer the purpose to a certain degree; but all have the disadvantage of communicating odours to the clothes, to which they have been applied, extremely disagreeable to many persons. As moths never attack *unwashed* wool, and even abandon the places where it is kept, this substance may be advantageously substituted for the above-mentioned articles by placing it in layers between clothes, or keeping small parcels in the corners of shelves or drawers. For this plan to be effectual, the wool must be used as it comes from the back of the animal, before any cleansing process has been employed that will deprive it of its natural oil or smell.

MOTHERWELL, William, a very beautiful writer of Scottish ballads, was born in Glasgow in 1797, and at an early age was placed under the care of an uncle in Paisley, from whom he received his education. While a youth, he was employed, for nearly two years, by Dr Watt, in assisting in the compilation of the Bibliotheca Britannica, and in that occupation displayed a passionate love of antiquarian lore, which characterized all his after years. His labours on the Bibliotheca were limited to that portion of the work which comprehends the books and printers of the fifteenth and sixteenth centuries—an employment highly congenial to his spirit, and which was serviceable to him in after life, when he became a collector of rare and valuable editions. After leaving Dr Watt, he obtained a situation in the sheriff clerk's office in Paisley, where he remained about ten years, during which time he attended one or two sessions at the Glasgow college. Among his earlier literary efforts were several contributions to The Visitor, a little periodical published at Greenock, and to the Harp of Renfrewshire, a collection of songs with notes, the editing of which he chiefly superintended. He afterwards employed himself busily in the compilation of an interesting collection of ballads, which he published in 1827, under the title of Minstrelsy, Ancient and Modern, illustrated by an historical introduction and notes. The ancient ballads in this collection were principally collected in the western counties of Scotland; the modern ones were chiefly his own. In 1828, he became editor of the Paisley Advertiser newspaper, and after having conducted that journal for about two years, he was offered the editorship of the Glasgow Courier, which he accepted, and continued to direct to the time of his death. While conducting the Paisley Advertiser, he, in conjunction with his friend, Mr Kennedy, author of Fitful Fancies, started the Paisley Magazine, a miscellany which displayed much talent and spirit, but which only survived for a year. His connexion with the Glasgow Courier may be considered as unfortunate for himself and the world of letters. The period during which he conducted it was one of great political commotion—the period, namely, immediately before and after the passing of the Reform Bill; and as he was a violent partisan of the high tories, he devoted all his energies against those liberal principles which were then in the ascendant. Literature was thus in a great measure abandoned for politics, and his own health suffered under the continued excitement consequent on conducting a three-times-a-week newspaper. Although subject to severe fits of illness, the intimation of his death came unexpectedly upon the public of Glasgow, and he was sincerely lamented by all parties, as one who—whatever might be his political opinions—had struck the ancient lyre of Scotland in a strain of tenderness that has not been surpassed. He died of apoplexy, after three hours' illness, on the 1st of November, 1835, and was buried in the Necropolis of Glasgow, where an elegant monument has since been erected to his memory.

Two years before his death, he published a collected edition of his poems, which was most favourably received. Most of his pieces are distinguished either by a spirit of warlike enthusiasm or of melting tenderness—and in either strain he is equally successful. Of the former, The Sword Song of Thornstein Raudi may be adduced as an example; of the latter, his well-known Jeanie Morrison, or what is perhaps still more exquisitely pathetic, his ballad beginning, My head is like to rend, Willie.—Mr Motherwell left unfinished the greater portion of an intended prose work, embodying the old wild legends of the Norsemen.

MOTHERWORT (*leonurus cardiaca*); a labiate plant, which grows in waste places. The stem is quadrangular, rigid, and the flowers are faint purple and very hairy. The calyx is terminated by sharp points. An infusion is a popular medicine among the country people, but is much less used now than formerly. Its properties are similar to those of other *labiatæ*.

MOTION. The motion of a body is the change of its place in space. All changes in the material world consist of motion. The life of the organic creation, and the action of inorganic bodies, consists in motion: what we call *rest*, is only relative. Experience alone convinces us of the motion of bodies in space. Zeno of Elea, endeavoured to prove this fundamental idea of motion to be contradictory to itself, in order to overthrow the testimony of experience. If we see that a body changes its external relations, we conclude that it moves: its continuance in the same relations is called *rest*. By a change of the situation or relation of bodies we are often deceived, and confound *rest* with *motion*. In some cases, it is easy to perceive the error; in others, it is so difficult, that many centuries have been necessary to dispel the illusion; for instance, in relation to the earth and the sun.—In motion, we must consider the cause, the moving body, the direction, the path described, the time, the velocity, and the quantity. The mass of the moving body must be taken into consideration, since the quantity of motion depends on the quantity of matter. To move twice as much matter, requires twice as much power. The direction of the motion of a body is the line along which a moving point proceeds, either for the whole or a part of the way. If all the points of a body move in the same direction, it is only necessary to observe the motion of a single point. The line described by this point is the path of the moving body. This path itself, if in a straight line, represents the direction of the motion; if in a curved line, the direction at every point of the curve is determined by the tangent to this point; that is, this tangent shows the direction of the moving body at that point in which it would continue to proceed, if it ceased changing its direction. If all the points of a body do not move in the same direction, the motion of each point, in particular, ought to be observed; and thus we may consider every motion as the motion of a point. By the space described, we understand the distance passed through by the moving point. Since we always consider the motion of points, this space is represented by a line; and thus the observation of motion becomes geometrical. Time is necessary for motion, even for the smallest. By the comparison of the space described, and the time in which it is described, we find the velocity. One body moves quicker than another, if it describes in the same time a larger space, or the same space in a less time. By the *quantity of motion* we mean the velocity combined with the quantity of matter. To move two pounds requires twice as much power as to move one pound with the same velocity. To move a body with the velocity 2, also requires twice as much power as to move the same body with the velocity 1. Hence it follows, that to move two pounds with the velocity 3, requires six times as much power as to move one pound with the velocity 1. Motion may be considered under several different views. With regard to change of position, by which it is ascertained, it is either *absolute* or *relative*. If a body passes from one place to another, this is called *absolute motion;* it is *relative* if we consider the objects to which we refer the motion of the observed body, whether in motion or at rest, as fixed points. With regard to change of position, the motion is, further, either *common* or *proper;* finally, either *apparent* or *real*. With regard to the powers or causes which produce motion, it is either *simple* or *compound; simple*, if it is produced by a single power, or by several powers acting in the same direction; *compound*, if several motions meet, the various directions of which form angles with each other. With regard to the direction, the motion is either in a *straight* or a *curved* line; with regard to the velocity, either *uniform*, or *accelerated*, or *retarded*, and the accelerated motion again is either uniformly or variably accelerated; and the retarded motion either uniformly or variably retarded. See *Mechanics*.

MOTMOT (*prionites*.) These are beautiful birds, about the size of a jay, with a long tail, the two middle feathers of which are destitute of vanes for about an inch, at a small distance from their extremity. This conformation was supposed, by some naturalists, not to have been the production of nature, but to have arisen from a caprice of the bird in tearing away the vanes, as, in the young birds, these feathers are entire: this supposition, however, is wholly erroneous. They inhabit South America, and are very difficult to keep in a tame state, from their living on certain kinds of insects, which are not easily procured. They are very shy and timid, and if taken when old, invariably refuse all kinds of food. They are solitary, never being seen in flocks, and but seldom even in pairs. Their usual places of resort are the depths of large forests, where they may be observed among the lower branches, or on the ground. They fly very badly, and hence build their nests in the ground, using the deserted holes of some of the smaller quadrupeds. The nest consists of a few withered blades of grass, on which they deposit two eggs. The principal species are the blue-headed motmot (*P. momota*), and the red-headed (*P. dombey*).

MOTTE, Antoine Houdar de la, a distinguished author, was born at Paris in 1672, and studied under the care of the Jesuits. His father, a hatter, who owned a small estate at Troyes, called *la Motte*, destined him for the law; but the son had a strong inclination for the theatre, and, after having appeared in some of Molière's plays at some private theatricals, he brought out his first piece, *Les Originaux*, in 1693, with so little success, that, from chagrin, he determined to join the Trappists. The celebrated abbe Bonthillier de Rancé (q. v.), learning his resolution, dissuaded him and a companion, who meditated the same act of folly, from taking this step. La Motte returned to Paris, and began to write for the opera with more success. He brought out a great number of pieces, and was soon allowed to be inferior only to Quinault. He next ventured into the field of comedy and tragedy. Though some of his productions were unsuccessful, his tragedy *Ines de Castro* met with a most favourable reception, notwithstanding its many faults. His Odes and Fables were also much admired. Having undertaken a translation of the Iliad, without a competent knowledge of the language, he involved himself in a dispute with Madame Dacier, on account of some remarks, in his introductory essay, derogatory to the merits of the poet. His *Réflexions sur la Critique*, in reply to the violent work of Madame Dacier, *Des Causes de la Corruption du Goût*, was written in a tone of moderation: the dispute was, however, continued (by La Motte in his *Discours sur la Tragédie, sur l'Eloge, sur l'Ode, sur la Fable*, &c.) until Fénélon, who was called in as arbitrator, decided the question; and J. B. Rousseau revenged the honour of the Grecian bard, by a severe epigram on his detractor. Other paradoxical opinions (for instance, his objections to verse, although he had almost always written in verse, and with more success than in prose) involved him in numerous disputes, and drew upon him many epigrams. La Motte always kept his temper in these controversies, and, although among the most admired writers of his day, never indulged in an acrimonious tone towards his adversaries. During the last twenty-four years of his life, he was blind, and his health was very feeble; but he preserved his serenity and kindness of temper, and died in 1731.

MOTTE, Countess de la. See *Lamotte*.

MOULDINGS. See *Architecture*.

MOULTRIE, Fort. See *Sullivan's Island*.

MOUND, in heraldry (from *mundus*, the world); a globe, having a cross on the top. Many heraldic eagles, as those of Austria, Russia, Prussia, have in one claw the sceptre, in the other the mound.

MOUNIER, Jean Joseph, secretary of the provincial estates of Dauphiné, deputy of the third estate of this province to the states-general, a man of uncommon virtue and zeal for the general good, was born in 1758, at Grenoble, where his father was a merchant. He was educated by a severe pedantic instructer, whose obstinacy and bad humour exposed him to much suffering, and was afterwards refused admission into the military service, because he was not of noble birth, so that he early imbibed a hatred against oppression and privileged orders. Disliking the commercial profession, he devoted himself to the study of law at the university of Orange, and, after three years, became an advocate. At the age of twenty-five years, he purchased the office of a judge-royal, which he exercised for six years with much reputation. His open declaration against the abuses of the stamp and land tax, as they then existed in France, and against the mal-administration of the finances, gave one of the first impulses, in 1787, to the general opposition to these oppressive measures; and when, in the following year, the severe and imprudent proceedings of the government occasioned disturbances in Grenoble, the public voice selected him as umpire. In the first deliberations of the national assembly (of which he was a member), he was conspicuous. He was one of the principal actors in the scene of the tennis-court, July 20. Until the events of the 5th and 6th of October, he took an active part in all the proceedings of the constituent assembly, and the resolution and honesty with which he conducted in the presidency of this body, under circumstances of great difficulty, protecting the interests of the nation, and repelling the unjust attacks on the royal family, secured him the esteem of the better part of the community. But when anarchy at length prevailed, and no hope remained of restraining the fierceness of unbridled passions, he retired from public life to the Dauphiné, and thence, in November, 1789, demanded his dismission. At the same time, he published an exposition of his conduct —*Exposé de su Conduite et des Motifs de son retour en Dauphiné*. At Geneva, to which he afterwards retired to escape the persecutions of the Jacobins, he published the *Appel au Tribunal de l'Opinion publique*—a work written with freedom and boldness, in which he described the events of October 5 and 6, and set forth the causes to which he attributed them. In 1793, he went from Switzerland to London, where government offered him the place of chief-justice in Canada, with a considerable salary, which, however, he refused, as he had not relinquished the hope of returning to his country; and Geneva, where he had till then resided, having been involved in the revolutionary disturbances, he retired to Germany, with his family, in 1795, where the duke of Weimar received him kindly, and gave him the castle of Belvedere (near Weimar), that he might establish there an institution for the education of young men from the higher ranks (chiefly young Englishmen).—Mounier here wrote his work *De l'Influence attribuée aux Philosophes, aux Francs-Maçons et aux Illuminées sur la Revolution de France*, which appeared in Tubingen, in 1801 (Paris, 1821). After the 18th Brumaire, he returned to France, was nominated, in 1802, prefect of the department Ille and Vilaine, and, in 1804, member of the conservative senate, and in the following year, was made a member of the council of state. He died January 26, 1806. His son, *Edward Claude Philip*, baron (born 1784), was auditor of the council of state under Napoleon; in 1809, became secretary of the cabinet, and, in 1810, was made *maître des requêtes*. In 1815, he entered into the chamber of deputies, and, in 1817, was made counsellor of state, and president of the commission appointed to settle the liquidations with foreign powers. In 1819, he was made peer.

MOUNTAINS; the largest elevations of the surface of the earth. Hills are distinguished from mountains by inferior height. Several mountains together, which cover a plain, are called a *group of mountains;* mountains that form a series of several miles in length, a *chain* or *ridge of mountains*. Single mountains, rising out of a plain country, are seldom met with. The cavities between the mountains are termed *valleys*. The sea-coasts are generally the lowest part of a country, which gradually rises, so that the centre of a continent is the highest, and is covered with considerable mountains. The chief mountains are connected in extensive chains all over the surface of the globe. The Ural mountains, which separate Asia from Europe, and send forth a branch towards Nova Zembla, are connected with the Severnoi or Sevous ridge, that forms the boundary between Norway and Sweden, and a part of Russia. Another chain stretches from the northern part of India to Thibet and Cashmere, where it forms the highest region, not only of Central Asia, but of the known world, running westward through Persia, and eastward through China. From the highest elevation of Northern Asia, the Bogdo mountains, which separate the seats of the Calmucks from those of the Mongols, a chain of mountains under the name of *Mossart* runs southward to Thibet: another, under the name of *Alak*, extends towards the west through the deserts of Independent Tartary and Bucharia, and joins the Ural mountains: a third, under the name of *Zangai*, in Mongolia, stretches eastward, then, turning, forms Corea and the cliffs and islands toward Japan: a fourth chain consists of the Alta mountains, which border on Siberia, from the Irtish to the Amour. The branches of these great Asiatic chains are innumerable. Between the Caspian and Black seas, the Caucasus (q. v.) is situated. It sends off branches through Asia Minor as far as Arabia, which form the ridges of Taurus, Lebanon, and Sinai, while others pass round the Black sea to Europe. From the Black sea, between Moldavia, Walachia, and Transylvania, the Carpathians extend through Poland and Hungary, and, in Silesia, join the mountainous regions of Germany. The Sudetes run between Bohemia and Silesia, sending forth branches to the north and west, through Lusatia to the Saxon Erzgebirge, and Voigtland. The Fichtelgebirge and the Thuringerwald, or Forest of Thuringia, together with the Eichsfeld and the northern Hartzgebirge, extend through the centre of Germany. The most elevated countries of Europe are Switzerland and Savoy, whose Alps are connected with the neighbouring chains of Germany, Italy, and France. A branch, united with them, the Apennines, running through all Italy as far as Reggio, is probably connected, by a submarine chain, with the mountains of Africa. The Rhætian Alps stretch between the Grisons and Milan; the Tridentine between the Tyrol and the territories of Venice; the Norican between the Tyrol and Salzburg; and those of Carinthia between Carinthia, Carniola, Friuli, and Istria. On the west, some branches of the Alps extend into France. The Pyrenees form the frontier wall and the principal elevation of the Spanish peninsula. In Africa, the chain called *Atlas* is the most famous. There is a distinction made between the Great and Little Atlas. The former, which is, perhaps, connected with the mountain chains of Arabia, runs westwardly to Barbary, separating it from Biledulgerid; the latter reaches from Tunis to Gibraltar. In addition to these, some less celebrated chains extend along the Nile, through Upper Egypt, Nubia, and Abyssinia, to unknown regions in the interior of Africa, where they are connected with the Mountains of the Moon. Thence some ridges stretch to the south of Africa, and join, perhaps, the Snow mountains, which take their course from the cape of Good Hope towards the interior. Next to Asia, America contains the highest mountains. With the Cordilleras (q. v.), along the western coast of Chile and Peru, other chains of mountains are connected, running through the rest of South

America. One ridge extends through the isthmus of Darien to North America, where it runs northward along the western coast, sending off different branches eastward into the interior, which, in all probability, join the mountain ridges of Northern Asia, in the extreme north. The highest known summits are of the Himalaya in Thibet (particularly the Dholagir, or White mountain), which has been made, by one measurement, 26,872 feet, by another 28,015 feet high. The perpendicular height above the level of the sea, of a peak belonging to the Mustag mountains, in Central Asia, measured by the English colonel Crawfurd, is about 26,500 feet; that of Chimborazo, according to Humboldt, 21,440; that of Mauna Kaah, on the Sandwich islands, 18,400; of Cayambourco, 20,000; of Antisana, 19,150; of Pinchinca, 15,940 (all three near Quito); of the farm-house of Antisana, the highest place inhabited by men, 13,434; of the city of Quito, 9560; of Mont Blanc, 15,680; of Ophyr, in Sumatra, 13,842; of Loucira, in the French department of the Upper Alps, 14,450; of Aiguille de l'Argentiere, 12,804; of St Gothard, 9075; of Ætna, 10,936; of Furca, 14,040; of the Brocken, 3716; of the valley of Chamouni, 3463; passage of Mont Cenis, 6773; of the city of Geneva, 1220. The heights of these mountains are inconsiderable in proportion to the great mass of the earth, the spherical form of which is not essentially altered by them; for the height of Chimborazo is not, to the diameter of the earth, in the proportion of 1 to 1000. The form of mountains is generally conical, that is, gradually tapering from the base upward, and terminating in a more or less pointed peak. The Alps, in Switzerland and Savoy, consist of an enormous collection of different mountains, disposed in several parallel chains. The highest of these chains is in the middle; those which rest on them diminish in height in proportion as they recede from the main branch. The highest ridge consists of steep rocks, which, with the exception of the declivities, are everywhere covered with ice and snow. Between the masses of rocks, that crown the highest chain, in pyramidal forms, are valleys, in which the snow, and ice proceeding from the half-melted snow, never thaws, even in summer, because of their high situation. Lower down, on both sides of the main branch, long wide valleys descend, which in summer are decked with a beautiful green, and, where their situation is not too high, are partly planted with corn and fruit-trees, partly used for pasturage. To these green vales deep and narrow passages descend from the high rocky valleys. These passages are filled with everlasting ice, and bear the name of *glaciers* (q. v.). Those chains of mountains which border on the main chain, present the same appearances, only on a smaller scale; for their tops likewise consist of pointed rocks, separated by such deep and narrow passages, which, even in summer, are covered with ice and snow, and to which succeed verdant valleys. The farther the chains recede from the main chain, the more do they diminish in height. Every thing bears a milder aspect. The tops of the single mountains are more rounded; the mountains themselves are decked with a beautiful green, and, by degrees, lose themselves in the plains. Countries covered with high mountains present, in the summer, different climates at different elevations, within a very narrow compass. We may ascend gradually from flourishing and delightful valleys, decorated with corn, fruit-trees, and vines, to pastures covered with odoriferous Alpine plants, and, near the declivities, with evergreens, and perceive the vegetation diminishing and dwindling as we advance, till, at last, all organic life ceases, and the cold prevents all further progress. The elevation of this region of perpetual winter is different in different latitudes; it is higher in warm countries, and lower in cold climates. That the air is colder on the mountains than it is in the plains, is evident from what has been said. This is to be attributed partly to the reflection of the sun's rays from the surface of the earth in plains, and its consequent accumulation in the lower strata of the atmosphere, but partly also to the greater density of the air, which is susceptible of being warmed in a higher degree than the thinner air of the mountains. That the air on the mountains is purer is certainly true; but that it is healthier also, can be admitted only in regard to a moderate height. At a great height, an indescribable oppression, combined with great weakness, seizes upon the whole body—a phenomenon which Saussure attributes to the diminished pressure of the air upon the vessels, and their consequent loss of elasticity. The interior of mountains is known only so far as it has been laid open to the miner in working mines.—See Denaix's *Tableau orographique de l'Europe* (Paris, 1826, 2 vols.); see also the articles *Alps*, *Andes*, *Cordilleras*, *Himalaya*, &c. For a comparative view of the principal elevations in the Eastern and Western hemispheres, with their heights in English feet, as ascertained by the best authorities, see Plate.

MOURADGEA D'OHSSON, Ignatius, born in Constantinople, was descended from a rich Armenian family. He entered into the service of the Swedish embassy, at the Ottoman Porte, and by his talents attained the highest diplomatic honours. He was made *chargé d'affaires*, knight of the order of Vasa, and, in 1782, minister plenipotentiary and envoy extraordinary. His knowledge of the Arabic and Turkish languages gave him the means of acquiring information respecting the Ottoman empire from the very sources. He resolved upon writing a history of Selim II.; but this was superseded by his plan of giving a full picture of the Ottoman empire. To this work he devoted himself with the greatest zeal and perseverance, and with great difficulty succeeded in collecting the first authentic information from a prejudiced, servile, and jealous people, respecting the national customs and habits, the interior of the seraglios, the mosques, and the private life of a Turk. With the materials which he had obtained, he proceeded to Paris in 1784, where he prepared his work for the press, and published it, in 1788 and 1789, in two volumes, under the title of *Tableau général de l'Empire Ottoman*. This work completely answered the expectations which had been formed respecting it. The beauty of the typography and the engravings occasioned an expense which exceeded the proceeds of the sale; but D'Ohsson, who possessed a large fortune, was willing to make sacrifices for the embellishment and perfection of his work. The revolution interrupted his literary activity, and he returned to Constantinople. Selim III., who honoured knowledge, allowed the two volumes which were published to be presented to him, and, far from being displeased at the disclosure of some secrets, gave orders to facilitate the learned writer's researches, by affording him the necessary information. After a long sojourn in Constantinople, D'Ohsson returned to Paris, where he found hardly any traces of his large property. Even the buildings where he had deposited the copies of his work, and the plates, drawings, &c., had been destroyed and plundered. Without suffering himself to be depressed by these misfortunes, he devised a still greater plan, which had in view an historical picture of the whole East, and became entirely absorbed in his desire to execute it. In 1804, he had completed two volumes of his *Tableau historique de l'Orient*, when the war with Sweden made him apprehensive of another interruption. He asked and received permission from his government to retire to the country. Here he continued to occupy himself on his undertaking during three years, and gave the fruit of forty-five years' labour to the world, in a work which contains, in three separate divisions, a complete view of the Ottoman empire. These three divisions have the separate titles, *Tableau historique de l' Orient* (a history of all the nations under the Ottoman government); *Tableau général de l'Empire Ottoman* (a view of the laws, religion, and customs, &c.); lastly, *L'Histoire de la Maison Ottomane* (from Osman I. till 1758). The whole was nearly completed when interrupted by D'Ohsson's death, August 27, 1807. The last volume of this work, which comprises in the whole seven volumes, appeared in Paris, 1824.

MOURNING. In most nations it is the custom of bereaved survivors to testify their grief for the loss of friends or relatives by some external change of dress and deportment. Different nations have employed the same emblems as symbols of the most opposite states of the mind, being governed altogether by their previous habits and associations, so that the signs of mourning are very various. Thus some wear the hair long, others cut it off; some shave the beard, others allow it to grow. The Eastern nations and the Greeks cut off their hair; the Romans allowed the beard and hair to grow, in mourning. Different colours have been adopted as badges of grief; the ancient Egyptians wore yellow; the Ethiopians gray; the Roman and Spartan women white, which is still the colour of grief in China and Siam; in Turkey, blue and violet; and in the other European countries, black is used for this purpose. Some have attempted to trace the associations by which the colours acquired their character to natural causes, but, it must be allowed, with little success. The Jews, in sign of grief at the loss of their relatives, rent their garments, tore out their hair, and wore coarse garments of a dark colour; they went barefoot, neglected their persons, and performed other acts of penance. The term of mourning with them was short. Among the Greeks and Romans, it was the custom to lay aside all ornaments of dress, to abstain from the bath, and other indulgences. The dress was also of a dark colour (except with the women), and the period of mourning was about a year. Among the ancients, as among the moderns, public mournings were common on the death of a distinguished public benefactor, and in the time of the Roman empire, on the death of the emperors.

MOURZOUK; the capital of Fezzan, in the kingdom of Tripoli; lat. 25° 54′ N.; lon. 15° 51′ E. It is the residence of the sultan of Fezzan, and is surrounded by walls twenty feet high and eight feet thick. The houses are of mud, and as rain is rare, are durable. Mourzouk is one of the greatest commercial places in Africa, forming the centre of communication between the central, northern, and eastern regions of that continent. Caravans arrive yearly from Egypt, Tripoli, Bournou, and Houssa.

MOUSE (*mus*). This genus includes not only what are usually termed *mice*, but also the *rats*; and under the common name of *mice* are also understood several species of *arvicola*, &c. The common mouse is not a native of the United States, but was brought there by the early settlers, and has now extended, with the increase of population, to every part of the continent. There are several varieties, distinguished by their colour, the rarest of which is the white. The mouse makes a nest not unlike that of a bird, and brings forth several times in a year, generally having from six to ten at each litter. When first born, mice are naked and helpless, but in about fifteen days are able to shift for themselves. The mouse is capable of being tamed, and exhibits considerable attachment to its keeper. As, from their numbers and depredations, they are extremely troublesome, several modes have been devised to destroy them; as cats, traps, poison, &c.—The American field mouse (*M. leucopus*) is very common in all parts of the United States, and is the representative of the European species (*M. sylvaticus*). They are very injurious to the farmer, from destroying great quantities of grain, which they hoard up; in a few nights they will almost ruin a field of newly planted Indian corn. This mouse is about three inches long, and has a streak of a mixed dusky and ferruginous colour along the back; the tail is dusky above and white beneath.—The meadow mouse does not belong to the genus *mus*, but is an *arvicola*. This diminutive animal occurs in vast numbers, living in burrows made in the banks of drains or streams. During the warm weather, however, they make nests among the grass, very similar to birds' nests, and generally containing six or eight young ones. In almost all grass fields when they are mown, small lanes or furrows may be seen among the roots of the herbage; these are the various communications made by the field mouse with its nest. Notwithstanding they are preyed upon by owls, hawks, &c., they multiply excessively, and sometimes commit great ravages in the grass fields.

MOUSQUETAIRES DU ROI (under the old French *régime*); mounted companies of royal guards, splendidly equipped, and composed of gentlemen of noble extraction. One of the companies was called the *mousquetaires gris*, from the colour of their horses being dapple-gray; the other the *mousquetaires noirs*, in which the horses were black. Their arms were a carbine, sword, and pistols. They were instituted by Louis XIII., and served as a school to many of the most distinguished French commanders.

MOUTH; in most animals, a cavity in the anterior part of the body, but very differently formed in different sorts of animals. It commonly serves for the reception of food, and is connected by a canal with the interior parts of the body, where the food is assimilated. In the higher orders, it is used for mastication, the emission of sound, deglutition, respiration, suction, and taste, being connected with organs which perform those processes. The lower jaw only is movable in this division. Some of the lower orders seem to be without a mouth, and to nourish themselves by absorption. In birds, the external parts of the mouth are a hard, bony substance, and it is not fitted for suction. In insects, the form of the mouth is very various.

MOVING PLANT (*hedysarum gyrans*). This plant is remarkable for the spontaneous motion of its leaves, which does not appear to depend on any external cause that we can determine. No sooner has the plant acquired its ternate leaves, than they begin to revolve this way and that; and this motion continues during the whole course of its vegetation. The whole plant is very seldom in motion at one time; one leaflet turns frequently, while the other, on the same leaf-stalk, is at rest; sometimes a few leaflets only move, at others, nearly all will be in motion. These movements are irregular both in time and in their direction, and occasionally, in a very hot day, the plant is entirely at rest. A high wind will often put a stop to these movements, but they continue both in the night and during rain. We are unable to excite them by touch, irritation, or any other art that we know of. The plant is a native of the Basin of the Ganges, and is by no means conspicuous in its appearance. It belongs to the *leguminosæ*, and has a jointed pod, purple flowers, and ternate leaves, the lateral leaflets of which are comparatively very small.

MOXA; a Chinese word adopted into the European languages, signifying a lanuginous or cottony substance, which is burned for the purpose of cauterizing the skin. The Chinese and Japanese prepare their moxa from the down of the mugwort (*artemisia Chinensis*).

MOZAMBIQUE. See *Mosambique*.

MOZART, John Chrysostomus Wolfgang Amadeus; the great German composer, born at Salzburg, 1756. At the age of four years, his father commenced teaching him some minuets and other small pieces on the harpsichord. He only needed half an hour to play a minuet with perfect correctness and ease. From this period, he made rapid progress, and, in his fifth year, composed little pieces, which he played to his father, who wrote them down. He had previously been so much delighted with all infantile games, that he would forget his meals for the sake of playing; but from the time when he commenced learning music, he lost all taste for the usual amusements of childhood. Although he applied himself with energy and activity to all subjects in which he received instruction, music was the occupation which seemed completely to fill his soul. He advanced so rapidly as to surprise even his father, who was constantly with him. A concert for the harpsichord, which he wrote in his fifth year, perfectly according to the rules of the art, was so difficult that only the most practised performer could have played it. In his sixth year, Mozart had already made such progress, that his father was induced to take him and his sister Maria Anna, who was also a musical genius, to Munich and Vienna, where the little artists were introduced at the emperor's court. The unequalled execution of young Mozart excited universal surprise, and the interest was heightened by the fact that he was anxious only to please real connoisseurs, and appeared little affected by the opinion of the multitude. Thus he requested the emperor Francis to send for Wagenseil; this was done, and the child then performed one of his concerts with surprising execution. Till this period, he had only devoted himself to the harpsichord. In Vienna, he had a little violin given him; and when the family returned to Salzburg, he had made such progress on this instrument, without the knowledge of his father, that, to the surprise of all the auditors, he performed the second violin in a trio, with the greatest precision. It was now evident that the whole soul of young Mozart was devoted to music; his mind was absorbed in it. Singular stories are told of his sensibility to the finest differences of tones. Even at this early period, he had the greatest aversion to discords and rough, shrill tones, not softened by combination; as, for instance, the sound of the trumpet, which, on one occasion, so affected him, that he fell to the ground, pale, lifeless, and convulsed. This delicate sensibility is apparent in all the works of Mozart. In 1763, when young Mozart was seven years old, the family made a journey beyond the borders of Germany, which spread his fame universally. In November of the same year, they arrived in Paris, where they remained six months, and were overwhelmed with attention and applause. Here young Mozart published his first sonatas for the harpsichord. In 1764, the family proceeded to England, and performed at court, the son playing on the king's organ with great success. At a public concert, symphonies of his composition only were performed. Here, as well as in Paris, compositions of Bach, Handel, &c., were laid before him, all of which, though exceedingly difficult, he executed with the greatest truth at first sight. During his stay in England, he composed six sonatas, which were published in London, and which he dedicated to the queen. In 1765, the family went, by way of the Netherlands, to Holland, where Mozart repeatedly performed on the organ in the cathedrals and monasteries. In the Hague, he fell dangerously sick. On his recovery, he published six sonatas, and dedicated them to the princess of Nassau. At the beginning of the year 1766, he was again four weeks in Amsterdam, and proceeded thence to the Hague, to assist at the installation of the stadtholder. The family next visited Paris, and after having been twice at Versailles, proceeded, by way of Lyons, through Switzerland to Munich, where the elector gave young Mozart a theme, on which he composed in his presence without piano or violin, wrote down the music, and, to the astonishment of all present, executed after having finished it. In 1766, they returned to Salzburg, where they remained till 1768, and then made a second journey to Vienna. The brother and sister performed in presence of the emperor Joseph, who commissioned young Mozart to write the music for a comic opera—*La Finta Semplice*. It was applauded by Hasse, the master of the chapel, and Metastasio, but was not performed. At the consecration of the orphan's church, he composed the mass, the *offertorium*, and a concert for trumpets, and led the solemn performance—a boy of twelve years old—in presence of the imperial court. In 1769, Mozart, who had been made master of the concerts at the court orchestra at Salzburg, commenced a journey to Italy, in company with his father. In Rome, he undertook to write down, on hearing it, the famous *Miserere*, annually sung in the Sistine chapel, during the holy week, and at that time kept very secret. He succeeded so well, that when he sang it in company to the harpsichord, Christofori, who had sung it in the chapel, expressed his wonder. In Naples, the scholars of the *conservatorio della pietà* supposed that the magic of his musical talent was in the ring which he wore; he took it off, and then their astonishment increased. In Rome, the pope made him a knight of the golden spur; in Bologna, after having composed, in half an hour, an antiphony for four voices in a room in which he was shut up alone, he was elected member and master of the chapel of the philharmonic academy. As he had engaged to compose the first opera for the carnival at Milan, he was compelled to refuse similar offers from Bologna, Naples, and Rome. He arrived at Milan at the end of Oct., 1770, and there composed, in his fourteenth year, the first opera, Mithridates, which was performed Dec. 26, and repeated more than twenty times in succession. In Verona, he also received a diploma as member of the philharmonic society. Thus honoured, he quitted Italy, where he was called *il cavaliere filarmonico*. When Mozart returned to Salzburg, in 1771, he found a letter, in which he was commissioned, in the name of the empress Maria Theresa, to compose the grand theatrical serenata *Ascanio in Alba*, for the celebration of the nuptials of the archduke Ferdinand. He undertook this commission, and, in August, returned to Milan for some months, where, during the festivities of the marriage, Mozart's serenata, and an opera composed by Hasse, were both performed alternately. In 1772, he composed, in celebration of the election of the archbishop of Salzburg, the serenata *Il Sogno di Scipione*. In the winter of 1773, he composed there his opera *Lucio Silla*, which was repeated twenty-six times in succession. After having completed a comic opera, called *La Finta Giardiniera* (1775); two grand masses; one serenata called *Il re Pastore*; and, in Paris, to which he had been invited a second time, a grand symphony for the *concert spirituel*, in that city, he went to Vienna, in his twenty-fourth year, where he engaged in the service of the emperor. He satisfied the great expectations which were raised by his early genius, and was the Raphael of musicians. But early as this great genius developed his powers in his own art, he remained a child in all the other relations of life. He never knew how to govern himself; he had no sense of the necessity of domestic order, of the value of money, and of the need of moderation in enjoyment. But this absent, distracted man seemed to become of a higher order when seated at the harpsichord. His mind expanded, and his attention was absorbed in the one object for which he was born—the harmony of sound. He preferred to play in the night till early in the morning, if he was not prevented. He usually composed from six or seven in the morning till ten, and almost always in bed; during the rest of the day, he would compose no more, unless he had something to finish. Besides music, there was but one thing to which he appeared devoted—billiards. His exterior was not favourable; he was short, pale, and thin, and his features were not striking. Among the works of his which have remained on the German stages, and which will always be the delight of the German nation, is his *Idomeneo, Re di Creta,* composed 1780, at Munich. Of his *Entführung aus dem Serail* (his fourteenth opera in the order of time), which was performed at Vienna, in 1782, Joseph II. said to the composer, "This music is too fine for our ears; there are a prodigious number of notes in it." "There are as many as are proper," replied Mozart. The Marriage of Figaro met with the highest applause. It was performed during the winter of 1787, at Prague. At the same place, Mozart composed, in the same winter, his Don Juan, which pleased in Prague even more than the Marriage of Figaro. Nevertheless, this opera, on its first representation, was not favourably received at Vienna, although Haydn, on this occasion, pronounced Mozart the greatest of all living composers. After having written, in 1790, *Cosi fan Tutte,* and, during the illness which caused his death, 1791, the *Magic Flute; La Clemenza di Tito,* and his famous requiem, he died, December 5, 1792, in the thirty-sixth year of his age, according to the opinion of the physician, from an accumulation of water on the brain. His instrumental compositions (his beautiful symphonies, his ethereal quartetts, concertos for the piano, sonatas, &c.) will remain a pattern for all nations and all ages. He has equal fame in sacred music, particularly for his grand hymns and masses. His requiem is generally said to have had the following origin. A count of Walseeg, who was a stranger to him, came one day, and requested him to compose a mass for the death of his wife, for which Mozart was to fix his own price. Mozart required 100, others say 200, ducats, but would not bind himself as to time, wishing to give the work perfection. The visiter paid the price demanded in advance, and promised, when the work was finished, to give an additional sum, and to call again in the course of some months. During this time, Mozart received the commission to compose *La Clemenza di Tito* for the coronation at Prague, and was on the point of entering the carriage to proceed to Prague, when the visiter reappeared, and reminded him of his promise. Mozart apologized, and promised to attend to the work immediately on his return from Prague. He commenced the mass with an energy and interest which he had never yet felt while composing any of his other pieces, so that his wife felt great anxiety lest the unusual exertion should affect his already declining health; indeed, Mozart himself, with tears in his eyes, acknowledged that he was writing a requiem for himself. His wife prevented him from continuing the work, and would not return him the manuscript till his health was apparently perfectly re-established, and he had repeatedly requested it. Mozart nearly completed the work, when he was again oppressed with melancholy; his health daily declined, and his death took place. Immediately on his death, the visiter appeared, demanded the piece, and received it unfinished, as it was left. This composition fell into the hands of his scholar Suszmayr, who presumed to make additions and alterations, particularly adding those instruments to the sanctus which were omitted, and arranged the whole as it is now printed. Mozart's works equally delight the mere amateur and the accomplished musician, notwithstanding the complete novelty of their character. He explored all the sources of the art, and attained the highest degree of perfection, by the richness, purity, and depth of his ideas. Mozart left a widow and two sons. The former married a second time, and died in 1826. His eldest son received a post in one of the government offices at Milan: the younger son, born 1792, became a performer, and composer on the piano-forte.

MUCIC ACID. This acid has generally been known by the name of *saccholactic* acid, because it was first obtained from sugar of milk; but all the gums appear equally to afford it. To obtain it from a gum, we have only to heat one part of this substance with two of nitric acid, till a small quantity of nitrous gas and of carbonic acid is disengaged, when the dissolved mass will deposit, on cooling, the mucic acid. The pulverulent acid is soluble in about sixty parts of hot water. It decomposes the muriate of lime. It scarcely acts upon the metals, but forms salts with their oxides. According to Berzelius, mucic acid consists of oxygen, 62·69, carbon, 33·69, and hydrogen, 3·62.

MUCIUS SCÆVOLA (properly *Caius Mucius Cordus*); the subject of a celebrated Roman tale. If we may believe the story, when Porsenna, king of Etruria, had besieged Rome to reinstate Tarquin in his rights, Mucius determined to deliver his country from so dangerous an enemy. He disguised himself in the habit of a Tuscan, and, as he could speak their language fluently, he gained an easy introduction into the camp, and, soon, into the royal tent. Porsenna sat alone with his secretary when Mucius entered. The Roman immediately rushed upon the secretary, and stabbed him to the heart, mistaking him for his royal master. Mucius, unable to escape, was seized. He gave no answers to the inquiries of the courtiers, and only told them that he was a Roman, and, to give them a proof of his fortitude, he laid his right hand on an altar of burning coals, sternly looking at the king, and, without uttering a groan, boldly told him that 300 young Romans like himself had conspired against his life, and determined either to destroy him, or to perish in the attempt. This extraordinary confession astonished Porsenna, who made peace with the Romans, and retired from their city. Mucius obtained the surname of *Scævola* (the Lefthanded), because he lost the use of his right hand by burning it in the presence of the Etrurian king.

MUCK. See *Amuck.*

MUCUS (from *μυξα*, the mucus of the nose); one of the primary fluids of the animal body, perfectly distinct from gelatin and vegetable mucus; transparent, glutinous, thready, and of a salt savour. It contains water, muriate of potassa, and soda, lactate of lime, of soda, and phosphate of lime. The mucus forms a layer of greater or less thickness, at the surface of the mucous membranes, protects these membranes against the action of the air, of the aliment, the different glandular fluids, &c. Independently of this general use, it has others that vary according to the parts of mucous membranes: thus the mucus of the nose is favourable to smell, that of the mouth to the taste; that of the stomach and the intestines assists in the digestion. A great part of the mucus is absorbed again by the membranes which secrete it: another part is carried outwards, either alone (as in blowing the nose or spitting), or mixed with the pulmonary transpiration, or with excremental matter, &c.

MUEZZIN, or MUEDDIN, in Mohammedan countries; the crier who announces the hours of prayer from the minaret. Five prayers are repeated daily,—one before sunrise, one at dawn, one at noon, one at four in the afternoon, and one at sunset. As bells are not in use among the Mohammedans, the muezzin proclaims the time, and reminds the faithful of their duty. He tells them at daybreak that prayer is better than sleep, and, at dinnertime, that prayer is better than food.

MUFTI. Grand mufti (called, also, by the Turks, *sheik-Ulislam*, which means head of the elected) is, in Turkey, the chief minister of religion and law, and follows in rank immediately after the grand visier. In fact, he receives from the sultan honours even beyond those of the visiers. His election depends entirely upon the sultan, and, as long as he remains in his office, he cannot be condemned to death. The sultan can only depose him, and cannot confiscate his property. The mufti, as interpreter of the Koran, is consulted on judicial proceedings, particularly in criminal cases, and, in general, on all affairs of importance. He usually gives his opinion in few words, without adding the reasons. In difficult cases, he adds, "God knows what is best." In his signature, he calls himself the *poor servant of God*. His written sentence is called *fetvah;* and hence the mufti himself is called *sahibi-fetive*, which means master of legal decisions, and his secretary is called *fetvah-emini*. The latter remains by him, decides cases with which the mufti does not wish to trouble himself, and presents the decision for his signature. The fixed revenue of the mufti amounts to 2000 aspers daily. (See *Asper*.) As he has, moreover, the disposal of several places in the imperial mosques, and is concerned in all the promotions of the members of the legal profession, he has many additional sources of income. In great cities, there is an under mufti, who receives his place from the grand mufti, but not without making him valuable presents.

MUGGENDORF; a village in the Bavarian circle of the Upper Maine, in a valley on the Wiesent, remarkable for the numerous caves in the environs. Some of them contain stalactites, and others great quantities of bones of unknown animals.

MUGGLETONIANS; a religious sect which sprang up in England, in the middle of the seventeenth century, so called from their founder, Muggleton, a tailor. He and an associate pretended to the character of prophets, and to be the two witnesses mentioned in Revelation.

MUHAMMED. See *Mohammed*.

MUHLBERG; a city of the Prussian territories, in the province of Saxony, celebrated in history for the battle between the Protestants, under John Frederic, elector of Saxony, and the Catholics, under the emperor Charles V. (q. v.), April 24, 1547. See *Germany; Smalcaldic League*.

MUKANNA, ATAN HAKEM (called also *Mokanna*, or *Borkai*), born in Khorasan, 775, pretended that the spirit of God, which had been transmitted from Adam, through Noah and all prophets, rested on him. Being hard pushed by the caliph Mohammed I., he burned himself, with all his treasures, in Sam. His followers were called *Moveidites*, and paid him divine honours.

MULATTO (Spanish, *mixed*) is commonly used to signify the offspring of a black and a white. The mulatto is of a yellow colour, with frizzled or woolly hair, and resembles the European more than the African. The descendants of Europeans and Indians are called *mestizos* (q. v.). In Spain, the term *mulatto* is often applied to those persons in whom the Moorish blood has been mingled with the Spanish.

MULBERRY (*morus*); a genus of plants allied to the nettle, and belonging to the natural family *urticeæ*. The species are trees, bearing alternate, simple, and often lobed leaves, and inconspicuous flowers, which are disposed in aments. The fruit is edible. The white mulberry (*M. alba*) is the most interesting of the genus, on account of the leaves being used for food by silk-worms. It grows to the height of forty or fifty feet, with a trunk two or more feet in diameter. The leaves are often divided into several lobes. The berries are white, sometimes, however, varying to red, and possess a sweet and insipid taste. It is a native of China, and the Chinese claim the art of rearing silk-worms, and manufacturing stuffs, from a very remote period. From China, this art was introduced into India and Persia, and was practised there for many ages before it reached Europe. The Greeks became acquainted with silk subsequent to the time of Alexander; and it was not till the end of the republic that the Romans, for the first time, saw this precious article. For many ages, silk bore an enormous price at Rome; but about the middle of the sixth century, during the reign of Justinian, two monks arrived at Constantinople from India, bringing with them the white mulberry, and the eggs of the silk-worm. From Constantinople, the white mulberry was introduced into Greece, and, about the year 1130, into Sicily and Italy. The first mulberry that was planted in France was living in 1802, and there still remain some stocks that are apparently of nearly the same age. It is now cultivated and naturalized throughout the south of Europe, and in some of the central parts of that continent. In southern climates, the leaves appear to contain a less proportion of water, and more of that substance which causes the worms to produce silk in greater abundance, and of a finer quality. In Greece, Asia Minor, and Persia, it is usual to give to the worms the branches, with the leaves attached to them; but, in Spain, Italy, and France, the leaves are carefully stript from the trees, taking care to despoil each tree entirely, otherwise the sap will be unequally attracted. The varieties of this tree are very numerous. The most approved mode of cultivation is from seed, and is practised exclusively in the south of France. A moderately fertile soil is the most suitable.

The black mulberry (*M. nigra*) is a tree about as large as the preceding, said to be a native of Persia, but which has been cultivated in Europe from a very remote period. The fruit is blackish purple, sugary, with a slight acidity, and very agreeable. It is, however, in perfection only for a few moments, and that at the time when it can be detached from the tree by a slight shaking of the branches. The Romans, indeed, preferred it to every foreign fruit. This tree often yields a prodigious quantity. The leaves are sometimes substituted for those of the white mulberry for silk-worms.

The red mulberry (*M. rubra*) is one of the most valuable of American trees, from the properties of the wood. The leaves are large, cordate, entire, or divided into two or three lobes, rough and hairy while young. The fruit is deep red, and of an agreeable sugary flavour, mingled with a slight acidity. It is rather rare in the Atlantic states, but is abundant in the west, on the Ohio and its tributaries, and on the lower parts of the Missouri. It grows to the height of sixty feet and upwards, with a trunk six feet in circumference. The wood is fine-grained, compact, strong, and solid, and, by many persons, is esteemed fully equal to the locust. It is employed in naval architecture at Philadelphia and Baltimore, for the upper and lower parts of the frame, for knees and floor-timbers, and for treenails, it is hardly inferior to the locust, but is scarce in our ship-yards, and difficult to be procured in any quantity. For posts it is considered nearly as lasting as the locust, but it grows more slowly, and requires a richer soil. These qualities of the wood have induced Michaux to recommend its introduction into the European forests. Some experiments have been instituted in France, to ascertain whether the leaves were proper for silk-worms; but the result was unfavourable. A much less quantity was obtained than from worms fed on the white mulberry, and there was a greater mortality: the worms, however, did not seem to be aware of the change, even when the leaves were mixed.

The paper mulberry has now been separated from the genus *morus*, and placed under an allied one,—*broussonetia*. It differs from the true mulberries in having the female flowers collected into a globular mass, which acquires a bright red colour. The tree is of a moderate size, bearing leaves which are either simple, or divided into lobes, more or less deep, rough above and hairy beneath. It was originally from India and Japan, but is now very commonly cultivated in Europe, and succeeds even in the more northern parts. For a long time, the female plant was unknown in Europe, and, at the present time, it is exceedingly rare in this country. The islanders of the Pacific make a kind of clothing from the bark of this tree, in the following manner: Twigs of about an inch in diameter are cut, and deprived of their bark, which is divided into strips, and left to macerate for some time in running water: after the epidermis has been scraped off, and while yet moist, the strips are laid out upon a plank, in such a manner that they touch at the edges, and two or three layers of the same are then placed upon them, taking care to preserve an equal thickness throughout. At the end of twenty-four hours, the whole mass is adherent, when it is removed to a large, flat, and perfectly smooth table, and is beaten with little wooden clubs, till it has attained the requisite thinness. This kind of cloth is easily torn, and requires to be washed and beaten many times before it acquires its full suppleness and whiteness. The natives dye it red and yellow, and also make a similar cloth from the bread-fruit-tree, an allied plant; but that from the mulberry is preferred. The paper which is used in Japan, and many other countries in the East Indies, is made from this plant. For this purpose, the annual shoots are cut, after the fall of the leaves, tied in bundles, and boiled in water mixed with ashes; after which the bark is stripped off by longitudinal incisions, and deprived of the brown epidermis. The bark of the more tender shoots is separated from the rest, as it furnishes a very white paper for writing, while that produced by the remainder is coarse and gray, and serves for wrapping, or similar purposes. The writing-paper is not suitable for quills, and these nations employ hair pencils, or the feathers of birds. For printing, they make use of wooden blocks; and this, as well as the writing, can only be executed on one side. Silk-worms will eat the leaves of this tree indiscriminately, even when mixed with those of the white mulberry. The fustic tree is now referred to the genus *broussonetia*. See *Fustic.*

MULCIBER. See *Vulcan.*

MULDAU. See *Moldau.*

MULE is the produce of a jackass with a mare, and has a large, clumsy head, long, erect ears, a short mane, and a thin tail. The produce of a she-ass and a stallion, called *bardeau* by Buffon, is a much inferior animal. The head is long and thin, the ears are like those of a horse, the mane is short and the tail well filled with hair. The former, or *mule*, commonly so called, is much valued for the saddle, and for drawing carriages, in Spain, Portugal, Italy, the East, and in Spanish America. In these countries, where great attention is paid to the breed, it is very well-limbed, as tall as the horse, but not so handsome, especially about the head and tail. These animals are mostly sterile; some, indeed, have thought that they are altogether incapable of producing their kind; but some few instances have occurred in which female mules have had foals, and in which the male has impregnated females, both of the ass and horse species; but such instances are very rare. Mules have been much employed, both in ancient and modern times. The Roman ladies had equipages drawn by mules; and, at this day, in Spain, the coaches of the nobility, and even of the princes, are usually drawn by them. Savoy produces very large ones, but the finest are bred in Spain. Mules are chiefly used in countries where there are rocky and stony ways, as about the Alps and Pyrenees, &c. They are sometimes fifteen or sixteen hands high. They are very proper for large burdens, and are remarkably sure-footed. They are much stronger for draught than our horses, are often as thick-set as dray-horses, and will travel several months together, with six or eight hundred weight on their backs. They are much hardier than the horse, cheaper kept, subject to fewer diseases, and will live and work twice as long. They take so much after the mare from which they are bred, that they may be procured of any kind, light or strong, as the owner pleases. The stubbornness complained of in them is owing only to ill treatment.

MULE, in manufactures; a machine, invented by Crompton, in 1779, for producing finer yarn than was spun by the machines previously in use, and which has now nearly superseded the jenny. (See *Cotton Manufacture.*) For producing threads of the finest kind, a process is necessary which is called *stretching*, and which is analogous to that which is performed with carded cotton upon a common spinning-wheel. In this operation, portions of yarn several yards long are forcibly stretched in the direction of their length, with a view to elongate and reduce those places in the yarn which have a greater diameter and are less twisted than the other parts, so that the size and twist of the thread may become uniform throughout. To effect the process of stretching, the spindles are mounted upon a carriage, which is moved back and forwards across the floor, receding when the threads are to be stretched, and returning when they are to be wound up. The yarn produced by *mule-spinning* is more perfect than any other, and is employed in the fabrication of the finest articles. The sewing-thread spun by mules is a combination of two, four, or six constituent threads, or *plies*. Threads have been produced of such fineness, that a pound of cotton has been calculated to reach 167 miles.

MULGRAVE ISLANDS; an archipelago in the Pacific ocean, lying between lat. 3° S. and 12° N., and lon. 160° and 177° E. It is composed of the groups of Browne, Raiick, Radack, Scarborough, and Kingsmill. The name is also applied, in a more limited sense, to a small group of islands in the southern part of the group of Radack, lat. 6° N., lon. 173° E. This group was examined by lieutenant Percival, in the United States schooner Dolphin, in 1825, more fully than had been previously done. (See Paulding's

Cruise in the Pacific, and Visit to the Mulgrave Islands, New York, 1831.) The islands are low, of a coral formation, and producing the cocoa and bread-fruit trees. The inhabitants are lively, intelligent, timid, and gentle. The group forms a circular chain of narrow strips of land, about half a mile wide, enclosing an inland sea 140 miles in circumference.

MULGRAVE, CONSTANTINE JOHN PHIPPS, lord, born in 1744, early entered the naval service. In 1773, the British government having determined to send out an expedition to reach the north pole, captain Phipps received the command of the two bomb-vessels, Racehorse and Carcass, destined for the voyage. The latter was commanded by lieutenant Lutwidge, under whom Nelson was cockswain. The expedition left the Nore June 4th, and on the 29th arrived off Spitzbergen. It returned in September of the same year, after having reached 80° 48′ of north latitude, beyond which an unbroken and impenetrable field seemed to stretch to the pole. Lord Mulgrave inherited his title (Irish) on the death of his father, in 1775, and was afterwards commissioner of the admiralty. He died in 1792.—See his *Journal of a Voyage towards the North Pole* (London, 1774).—His brother *Henry* was born in 1755, entered the army in 1775, served in North America, as aid to general Knyphausen, and returned with the rank of lieutenant-colonel. In 1781, he was elected member of parliament, and entered fully into Pitt's system of politics. In 1792, by the death of his elder brother, Constantine John, he succeeded to the title and family estate. On the breaking out of the French war, he was employed in some confidential mission by Mr Pitt. Mr Pitt, in 1804, made him chancellor of the duchy of Lancaster, and in 1807 he was nominated first lord of the admiralty. In 1812, he was removed from the admiralty to be master-general of the ordnance, and was raised to the rank of viscount and earl, by the title of *viscount Normanby and earl of Mulgrave.* In 1818, he resigned the place of master-general of the ordnance to the duke of Wellington, but was, by a special agreement, to hold a seat in the cabinet. He died in 1831. His son succeeded to his titles.

MULL; an island of the Hebrides, considered to belong to Argyleshire. Its extreme length is thirty-five miles, and its greatest breadth is thirty; superficial area, 420 square miles. The island is, for the most part, rugged and mountainous; and Benmore, the highest mountain is supposed to be elevated three thousand feet above the level of the sea. Agriculture, of recent years, has been greatly improved. The land is more peculiarly adapted for grazing, and there is a very hardy race of black cattle, of small size. The principal village is Tobermory. Population, about 10,000. Lon. 6° W.; lat. 56° 30′ N. Between it and the main land of Argyle and Inverness shires, is the sound of Mull. See *Hebrides*.

MULLEIN. The common European mullein (*verbascum thapsus*) grows in old fields, road-sides, &c., in barren soil, and is a conspicuous plant. The root is biennial; the stem simple, cylindrical, two or three feet high, and, together with the leaves, is covered with a very thick down. The flowers are yellow, almost sessile, and are disposed in a long cylindrical spike. It is of very little utility, and is avoided by all animals except goats. About eighty species of mullein are known, most of them natives of the regions about the Mediterranean.

MULLER, JOHN. See *Regiomontanus*.

MULLER, JOHN VON, a celebrated historian, born at Schaffhausen, in 1752, was the son of a preacher and schoolmaster there, and was indebted to his maternal grandfather for the future bent of his mind. Before he had learned to read, he had become familiar with the principal events of Swiss history, through the conversation of the kind and enthusiastic old man. His diminutive size, shortness of sight, and delicate constitution, prevented him from engaging in the sports of his age, while his studious disposition and warm heart excited the hopes and won the affections of his elders. At the age of nine years, he wrote a history of his native city; and to the ancient classics, which he began to read secretly in his thirteenth year, he was indebted for that love of liberty and moral grandeur, that clearness and method of thought, and elegance and energy of expression, which appear even in his school exercises. Being intended for the church, he went to Gottingen in 1769, where his teachers were Michaelis, Walch, Less, and Miller, and his favourite studies, exegesis and ecclesiastical history. The influence of Schlozer soon induced him to renew his historical studies, the first fruits of which appeared in his *Bellum Cimbricum* (1772). On his return to Schaffhausen, Muller preached with success, and was appointed professor of Greek in the gymnasium. Here he formed an intimacy with Charles Victor von Bonstetten, which gave rise to the admirable Letters of a young Scholar to his Friend (in German, published in 1802). Bonstetten procured him the place of family tutor, at Geneva; and the celebrated Bonnet afterwards received him into his house. The years 1777 and 1778 were spent in excursions through Switzerland, in studying the sources of Swiss history, and the ancient classics. During the winter of 1778, he delivered lectures on universal history. The substance of these lectures is given in the Twenty-four Books of Universal History, which form the three first volumes of his works. The first volume of his History of the Swiss was published at Berne (the titlepage said Boston) 1780, and he soon after went to Berlin, where he published his *Essais historiques*. Although Frederic II. (the Great) received him with distinction, no provision was made for him, and he was disappointed in his expectations of obtaining a place in the academy; he therefore left Berlin, and became professor of history at Cassel (1781). Here he produced his treatises *De l'Influence des Anciens sur les Modernes*, and *De l'Etablissement de la Domination temporelle du souverain Pontife au 8me Siècle*. In 1783, Muller returned to Geneva, and renewed his examination of the documents of the history of Switzerland. In 1786, he was invited to Mentz by the elector, with the post of librarian and court counsellor, and here published a new edition of the first volume, with a second volume of his history. Some political treatises, which he published at Mentz, contributed to extend his reputation, and to raise him to higher dignities at the electoral court. In 1791, the emperor created him baron of the empire, with a patent of nobility. When Mentz fell into the hands of the French (1792), Muller, who had no sympathies with the revolution, went to Vienna, and was made a member of the privy chancery of court and state. His pamphlets on the occasion of the separate peace of Prussia, *Die Uebereilungen und der Reichsfriede* (1795), and those entitled *Die Gefahren der Zeit*, and *Das sicherste Mittel zum Frieden* (1797), are master-pieces of eloquence. In 1800, he was appointed first keeper of the imperial library, and now found time to devote to his historical studies, which had been interrupted by his political duties and the troubled state of the country. In 1804, he left Vienna, and went to Berlin, where he devoted himself entirely to his studies. Several treatises which he published on the History of Frederic II., on the Decline of Liberty among the Ancients, &c., are contained in the eighth volume of his works. He was preparing materials for writing the history of

Frederic the Great, when the battle of Jena put a stop to his labours. Napoleon had a conversation with him at Berlin, and treated him with much distinction. The genius and kindness of the emperor won his esteem, and, in his discourse *De la Gloire de Frederic*, delivered before the academy, he spoke of him in favourable terms. This made Muller an object of suspicion in Prussia: he was, therefore, more ready to accept a place at the university of Tubingen; but while on his way thither, received the information of his appointment as secretary of state to the kingdom of Westphalia, which post he entered upon with reluctance. He was finally permitted to resign it in 1808, and died in 1809. The first division of the fifth volume of his History of Switzerland was published in 1808. His complete works were published at Tubingen, in 1810, &c., in twenty-seven volumes. His letters (vol. 4—7 and 13—18) contain important materials for forming a just estimate of his character. Heeren's *Muller der Historiker* (Leipsic, 1809) presents an impartial view of his services and his faults. His great work—*Geschichte Schweizerischer Eidgenossenschaft*—comes down only to 1489. It is distinguished for accuracy of research, profound and broad views, and, although minute, is not dry.

MULLER, JOHN GOTTHARD VON, one of the most eminent engravers of Germany, was born in Wurtemberg, 1747, and early displayed so much talent, that the duke sent him to Paris in 1770. Here he studied engraving under the celebrated Wille, made rapid progress, and was chosen member of the academy of arts. He was soon after invited to Stuttgard, by the duke of Wurtemberg, as professor of the academy in that place, and there published the master-pieces by which he has become celebrated. His principal historical pieces are the Battle of Bunker Hill, from Trumbull, and the Madonna della Sedia of Raphael. He is particularly remarkable for the purity and softness of his burin. He died in 1830. His son *John Frederic William*, born at Stuttgard in 1782, was also a distinguished engraver. He received his education at the gymnasium in Stuttgard, and was instructed by his father, in geometry and perspective. His attempts with the burin were successful beyond expectation, and, in compliance with the precepts and example of his father, he employed himself assiduously in the study of drawing. At the age of twenty years, he went to Paris, and applied himself with such excessive ardour as to injure his health; he likewise practised oil-painting, and executed three portraits from nature. While at Paris, he engraved the Venus of Arles for the *Musée Français*, and a statue *La Jeunesse* for Robillard: the latter exhibited a wonderful skill in imitating the appearance and expression of marble, on copper. In 1805, he painted and engraved the portrait of the crown prince, since king of Wurtemberg; began the famous John, after Domenichino, and drew the St Cecilia of the same master. In 1808, it was proposed to him, by Rittner, a dealer in works of art, to engrave Raphael's Madonna del Sisto, in the Dresden gallery; and, animated by the greatness of the undertaking, he determined to devote all his powers to its execution, and, previously, to study his art in Italy. In 1809, he returned from Italy, and entered, with his usual industry, upon his great work. In the mean time, he executed several works, such as the portraits of Jacobi, Schiller, and Hebel, and the Adam and Eve, after Raphael. In 1814, he was appointed professor in the Dresden academy of arts; but his health began to fail, and he exhausted the last remains of his mental and bodily vigour in the completion of his favourite work. He died in 1816, without having seen an impression of this splendid production.

MULLER, FREDERIC, usually called *Maler Muller*, or *Muller the Painter*, born at Creuznach, in 1746, published, as early as his eighteenth year, and subsequently, several collections of etchings (animals, compositions in the Flemish style, pastoral scenes, &c.), which were remarkable for their originality and freedom. In 1776, he went to Rome, and studied the works of Michael Angelo, but without much success. Like many of those who imitate that master, in attempting to copy his grandeur, he fell into an exaggerated style. As a poet, he deserves more credit. At a time when German poetry had degenerated into a mere versified prose, Muller appeared among the great writers who gave a new impulse to German literature. (See *German Literature.*) His complete works were published at Heidelberg (1811, 3 vols.). The principal are Niobe, Faust, and Genevieve. They are characterized by richness of fancy, warmth of passion, and elevated delineation of character, though sometimes wild and disconnected. He died at Rome, in 1825, in the eightieth year of his age.

MULLER, WILLIAM, a German poet, born at Dessau, 1795, studied at Berlin (1812), where his favourite branches were the historical and philological. The war of 1813 called him from his books, and he was present, as a volunteer, in the Prussian army, at the battles of Lutzen, Bautzen, Hanau, and Culm. In 1814, he returned to his studies at Berlin, and cultivated the old German poetry and literature. His early display of talents had induced his father (a mechanic, in moderate circumstances) to allow him to follow his own inclinations; and, at Berlin, he had enjoyed the advantage of the instructions of Bockh, Buttmann, Ruhs, and Uhden. His journey to Italy (1819) produced his ingenious work *Rom, Romer, und Romerinnen* (Berlin, 1820); and, on his return to Germany, he became teacher of Latin and Greek, in the newly established school at Dessau, where he was also appointed ducal librarian. In 1824 appeared his *Gedichte aus den hinterlassenen Papieren eines reisenden Waldhornisten*, which displays great poetical merit. His *Lieder der Griechen* (1825) celebrates with poetic fire, the awakening of an oppressed nation, its struggle, and its victory. His *Lyrische Spaziergange* displays the same truth to nature, freshness, and fire, and the same harmony of language, which characterize his other poems. He also contributed many critical papers to several German periodicals and encyclopædias, and his *Homerische Vorschule* (1824) is a work of much learning. His *Bibliothek Deutscher des 17 Jahrhunderts* (10 vols., Leipsic, 1822—27) is a valuable collection of the best lyric poems of that period. He died in 1827. His works were collected in 5 volumes (Leipsic, 1830).

MULLET (*mullus*, L.); a genus of acanthopterygian fishes, distinguished by the oblique form of their head; by two long appendages under the chin, and large scales on the head and body, which are very easily detached. Their body is oblong, and generally of a red or yellow colour; their head of a moderate size; their eyes situated close to each other. The most celebrated species is the *M. barbatus*, which is found in the Mediterranean. These fish were held in great estimation among the epicures of ancient Rome, and were sometimes sold for their weight in silver. Pliny gives an instance where about £60 were given for a single fish, of about three pounds' weight. Juvenal also records the height to which luxury had attained in his days, in speaking of the prices given for the mullet—"*Mullum sex millibus emit, Æquantem sane paribus sestertia libris.*" But the extravagance of these conquerors of the world was still more strongly exemplified in the mode in which these fishes were served up: there was a vessel of water, in which the fishes were alive, in the eating room, whence it was conveyed immediately to the fire, and dressed in the same apartment. It was even customary to place them in glass vases, that the guests might be gratified by observing the changes of colour which they underwent in expiring. Apicius, that prince of epicures, "*nepotum omnium altissimus gurges*," hit upon a mode of suffocating them in a certain pickle, which heightened their flavour. In modern times, they are but little esteemed, though their flesh is white, fat, and well tasted. The roes are known in Italy, under the name of *botargo:* they are prepared in a peculiar manner, and are highly prized.

MULTIPLE, in arithmetic, is a number which contains another number a certain number of times. Thus eighteen is a multiple of six, or of three, or of nine, &c. *Common multiple* of two or more numbers is that which contains those numbers a certain number of times. Thus thirty-six is a common multiple of four and nine, being equal to nine times the first, and four times the second. To find the *least common multiple* of several numbers: reduce them all to their prime factors, then the product of the greatest powers of those prime factors is the least common multiple required. Let it be proposed to find the least common multiple of twelve, twenty-five, and thirty-five, or the least number that will divide by each of them without a remainder. Here $12=3\times 2^2$; $25=5^2$; and $35=5\times 7$; therefore $3\times 2^2\times 5^2\times 7=2100$, the least common multiple required.

MULTIPLYING GLASS, in optics; one wherein objects appear increased in number. It is otherwise called a *polyhedron*, being ground into several planes that make angles with each other, through which the rays of light, issuing from the same point, undergo different refractions, so as to enter the eye from every surface in a different direction.

MULTIVALVES, in natural history; the name of a general class of shell-fish, consisting of three or more shells.

MULTNOMAH; a river of the Oregon Territory, which rises in about lat. 40°, among the Rocky mountains, runs about 500 miles through a country of extreme fertility, and unites with the Columbia, opposite Wappatoo island. The first part of the country through which it flows is level and open, but the remainder, and much the larger part, is covered with a forest, which is probably not exceeded by any on the globe for the size of its trees and the excellence of their timber. The Multnomah is 500 yards wide at its mouth, and has five or six fathoms of water. There is a sand-bar at its mouth, but it is otherwise free from all obstructions to navigation for seventy miles.

MUM; a malt liquor, which derives its name from the inventor, *Mumme*, a German. It was formerly exported from Germany in large quantities, but is now less used.

MUMMIES (by some derived from the Arabic *momia*, or the Coptic *mum*, bitumen or wax); the dead bodies of the Egyptians, which were preserved by embalming. Owing either to the religious opinions of the Egyptians, or to the nature of the country, which rendered interment inconvenient, or the want of fuel, which rendered burning difficult, they embalmed all their dead, and deposited them in subterraneous chambers, or in grottoes excavated in the mountains. An immense number of them has been found in the plain of Saccara, near Memphis; hence called the *plain of the mummies*, consisting not only of human bodies, but of various animals, or heads of animals, bulls, apes, ibises, crocodiles, fish, &c. Numerous caves or grottoes, with contents of the same kind, are found in the two mountainous ridges which run nearly parallel with the Nile from Cairo to Syene. Some of the most remarkable of these tombs are those in the vicinity of ancient Thebes, in the Lybian mountains, many of which were examined by Belzoni, and those near Eleithias (described by Hamilton), farther up the river, which, though less splendid than the Theban sepulchres, contain more illustrations of the private life of the Egyptians. The sepulchral chambers are almost entirely covered with fresco paintings and bass-reliefs, and frequently contain statues, vases, &c. Some of them (the royal sepulchres) consist of suites of spacious halls and long galleries of magnificent workmanship. Those of private individuals vary according to the wealth of the deceased, but are often very richly ornamented. Many of these tombs have been ransacked by Arabs for the purpose of plunder, and great numbers of the mummies destroyed for the resin or asphaltum they contain, which is sold to advantage in Cairo. The tombs and mummies are, many of them, two or three thousand years old, and are, in part, indebted for their preservation to the dryness of the soil and the mildness of the climate. The processes for the preservation of the body were very various. Those of the poorer classes were merely dried by salt or natron, and wrapped up in coarse cloths, and deposited in the catacombs. The bodies of the rich and the great underwent the most complicated operations, and were laboriously adorned with all kinds of ornaments. Embalmers of different ranks and duties extracted the brain through the nostrils, and the entrails through an incision in the side; the body was then shaved, washed, and salted, and, after a certain period, the process of *embalming* (q. v.), properly speaking, began. The whole body was then steeped in balsam, and wrapped up in linen bandages; each finger and toe was separately enveloped, or sometimes sheathed in a gold case, and the nails were often gilded. The bandages were then folded round each of the limbs, and finally round the whole body, to the number of fifteen to twenty thicknesses. The head was the object of particular attention; it was sometimes enveloped in several folds of fine muslin; the first was glued to the skin, and the others to the first; the whole was then coated with a fine plaster. A collar of cylindrical glass beads of different colours, is attached to the masks which cover the head, and with it is connected a tunic of the same material. The beads, both in the collar and tunic, are so arranged as to form images of divinities, of the scarabæus, the winged globe, &c. Instead of this, the mummy is sometimes contained in a sort of sheath, made of paper or linen, and coated with a layer of plaster, on which are paintings and gilding. These paintings represent subjects relating to the duties of the soul, its presentation to the different divinities; and a perpendicular hieroglyphical inscription in the centre gives the name of the deceased, and of his relations, his titles, &c. The whole is then placed in the coffin. Those mummies which have been examined present very different appearances. One class has an opening in the left side, under the arm-pit, and in another the body is whole. Some of those which have been opened have been dried by vegetable and balsamic substances, others by salt. In the former case, aromatic gums or asphaltum were used (the gums, when thrown into the fire, gave out an aromatic odour); in these the teeth and hair are generally preserved; but if exposed to the air, they are soon affected. Those prepared with asphalt are of a reddish colour, and are in good preservation. Those dried with saline substances are of a black, hard, smooth appearance. On exposure to the air, they attract moisture, and become covered with a saline substance. Those mummies which have no opening are also partly preserved by saline substances, and partly by asphalt. In the latter, not only the cavities of the body are filled with it, but the flesh, bones, and every part, seem to be penetrated by it: it was probably injected in a hot state. These are the most commonly met with. They are hard, black, and without any disagreeable smell. The whole mummies prepared with salt alone are white and smooth, and resemble parchment. The coffin is usually of sycamore, cedar, or pasteboard; the case is entire, and covered, within and without, by paintings, representing funeral scenes, and a great variety of other subjects: the name of the deceased is also repeated on them in hieroglyphic characters. The cover, which is also entire, is ornamented in the same manner, and contains, too, the countenance of the deceased in relief, painted, and often gilded. The breast is covered with a large collar; a perpendicular inscription occupies the centre, and funeral scenes the sides. The coffin is often enclosed in a second, and even third case. See in the Philosophical Transactions, for 1825, an Essay on Egyptian Mummies, by A. B. Granville, M.D.

The name of *mummies* is likewise given to human bodies preserved in other ways, either by accident or by some artificial preparations. The Guanches, or aboriginal inhabitants of the Canaries, preserved the bodies of their deceased friends, which have been found in great numbers in the catacombs in Palma, Ferro, Teneriffe, &c. The natives called them *xaxos*. They are dry, light, of a yellow colour and strong odour, and often injured by worms; they are enveloped in goat skins, and enclosed in cases. They are supposed to have been dried in the air, after having had the entrails removed; and they were also covered with a sort of aromatic varnish. Humboldt found mummies prepared in a similar manner in Mexico. The Peruvians, also, had the art of preserving the bodies of their incas. Mummies were formerly used in medicine, under the name of *mumia vera*, on account of the balsam they contained; but they have long ceased to be so employed. See Sieber, *Ueber Ægyptische Mumien* (Vienna, 1820); Granville *On Egyptian Mummies* (London, 1825). The burial-place of the Capuchin monastery, at Palermo in Sicily, is a large subterranean vault, divided into several wide and lofty galleries, in the walls of which are niches containing several hundred human bodies, kept in an upright position by being fastened to the wall behind, and clothed in their usual dress. The monks have a peculiar manner of preserving bodies, which they keep secret. Natural mummies are frequently found preserved by the dryness of the air. In a vault of the cathedral at Bremen, called the *lead-cellar* (because it was formerly employed for melting lead, for aqueducts and organ pipes), are bodies in good preservation. In the monastery of St Bernard, on mount St Bernard, the bodies of travellers who have been buried in the snow, are deposited in a chapel, in which there are open windows, protected by grates. They are placed in a sitting position, leaning each on another's breast. The cold prevents their putrefaction, and gives them time to dry. The Gaulish mummies, in the cabinet of comparative anatomy, in the Jardin du Roi, were found in Auvergne, in the last century. They bear no marks of any balsamic preparation, but are enveloped in linen, and appear to have been interred with great care. It is uncertain whether their preservation was owing to the nature of the soil, or to a peculiar and now unknown process of embalming. Dried bodies have also been found in some of the saltpetre caves of the western parts of the United States of America.

MUMPS; the common name of the disease called, in scientific language, *cynanche parotidea*. It comes on with the usual febrile symptoms, which are soon attended with a swelling of the jaws and neck, sometimes on one side only, but commonly on both. The causes of it are not known with certainty. Children are more subject to it than adults. It seems, sometimes, to be the effect of cold. It is often epidemic, and, according to Cullen, is contagious. In general, it runs its course without dangerous symptoms, and hardly requires any remedies; exposure to the cold should be avoided. The mean duration is from ten days to a fortnight.

MUNCER, Thomas. See *Müntzer*.

MUNCHHAUSEN, Jerome Charles Frederic von, the original of the well-known narrator of wonders, was a German officer who served several campaigns against the Turks in the Russian service. He was a passionate lover of horses and hounds; of which, and of his adventures among the Turks, he told the most extravagant stories; and his fancy finally so completely got the better of his memory, that he really believed his most improbable and impossible fictions, and was very much offended if any doubt was expressed on the subject. In relating these monstrous lies, his eyes would shine and start out of his head, his face became flushed, the sweat rolled down from his forehead, and he used the most violent gestures, as if he were really cutting off the heads of Turks, or fighting the bears and wolves that figure in his stories. Having become acquainted with the poet Bürger at Pyrmont, and being pleased with his society, Münchhausen used to relate those waking dreams to him; and the poet afterwards published them, with his own improvements, under the title of *Wunderbare Abentheuer und Reisen des Herrn Von Münchhausen*, translated from the English, London (Gottingen), 1787. A part of them had already appeared in the third volume of the *Deliciæ Academicæ* (Heilbronn, 1765), under the title of *Mendacia Ridicula*. The wit and humour of the work gave it great success, and it was translated into several foreign languages. When it appeared in England, the British reviewers laboured to show that it was a satire upon the ministry. Münchhausen was very angry at the liberty thus taken with his name, and Bürger became involved in some difficulties in consequence. An enlarged edition was published by Schnorr, in four volumes (Gottingen, 1794—1800). Münchhausen when quite advanced, married a very young wife, who, to the astonishment of every one, presented him with a son, the consequence of which was a suit prosecuted by his relations after his death, in 1797, in support of their claims to his estate.

MUNICH (in German, *München*), capital of the kingdom of Bavaria, a royal residence and archiepiscopal see, lies in a plain on the left bank of the Isar (Iser); lat. 48° 8′ N.; lon. 11° 35′ E. The population, including the suburbs of Au and Haidhausen and the military, is 92,000. It is surrounded with a rampart, but is not a place of great strength; on the outside of the rampart are the suburbs. The streets are generally broad and straight, but not well paved; the houses high, and of good appearance; the public edifices numerous; and the city is accounted one of the handsomest in Germany; few of the old towns on the continent make a better appearance. The royal palace is a large edifice, plain in its exterior, but in its interior magnificent. The most remarkable apartment is the *kaiser-saal*, or emperor's hall, one of the grandest in Germany. There are several other palaces; twenty-two churches, some of them magnificent; council-house, arsenal, barracks, mint, theatres, operas, &c., &c. There are many charitable institutions, which are extensive and well supported. The literary and scientific establishments are numerous, among which are the central library, said to contain 400,000 volumes (20,000 of them *incunabula*), and 9000 manuscripts; the royal cabinet of medals, containing 10,000 Greek and Roman coins; the museum of antiquities, said to be the most complete in Germany; the academy of sciences, erected in 1759, having an extensive collection of specimens of natural history, models, and instruments; the military academy, lyceum, gymnasium; the veterinary and surgical schools, observatory, cabinet of medals, gallery of pictures, and botanic garden. In 1827, the university of Landshut was transferred to Munich; it has an agricultural chair, a botanical garden, anatomical and chemical institutes, and, in 1829, had 1800 students. The environs of the city are pleasant, being enlivened by gardens and various places of public resort. The Iser is not navigable; and Munich is not distinguished for trade or manufactures. The city has been much embellished and enlarged within the last fifteen years, particularly by the taste of the present king. Among the recent erections are the *Odeon* (principal hall, 130 feet long, 75 broad); the New Palace (680 feet long, 150 high), in front of which is a bronze statue of the late king; the *Pinakotheca*, or new edifice intended for the reception of the picture gallery, the Boisserée collection, the works of art, which were purchased by the king in Italy, &c., in nine halls and twenty-three cabinets; the *Glyptotheca* (q. v.); All Saints' chapel, painted in fresco, by Hess, &c. Munich was founded in 962, by Henry, duke of Saxony and Bavaria, on an estate belonging to the monks of Scheffelar, whence its name (*München*, from the German *Mönchen*, monks). The emperor Louis the Bavarian conferred on the city its privileges in 1315, and in 1392, it became the residence of the younger Bavarian line, which survived the others, and thus rendered Munich the capital of Bavaria. It was captured by Gustavus Adolphus in 1632, by the Austrians after the battle of Blenheim (1704), and again in 1741. (See *Bavaria*.) The French entered it in 1800.

MUNICIPIA were those towns in the Roman empire which elected their own magistrates (*duumviri, collegium decurionum*), and were governed either according to the Roman law, or their own laws. In the first case, they possessed the right of Roman citizenship in its widest extent (*municipia cum suffragio*); in the latter case, they could only attain to military offices of honour.

MUNNICH, Burkhard Christopher, count of, born in the duchy of Oldenburg, 1683, where his father was a privy counsellor, received a careful education, then travelled to France, and, in 1701, became a captain in the Darmstadt troops. In 1705, he entered the service of Cassel, in which he attained the rank of colonel, after his liberation from captivity (he had been taken by the French in the battle of Denain). In 1716, he entered as colonel into the Polish-Saxon service, and in 1717, became major-general. Driven thence by the intrigues of the field-marshal general count Flemming, he entered the Swedish, and after the death of Charles XII. in 1720, the Russian service. May 22, Peter the Great made him lieutenant-general. Catharine I. conferred on him the order of Alexander. Peter II. made him, in 1727, general-in-chief, and in 1728, gave him the title of *count*. In 1731, he became, under Anna, field-marshal-general, and president of the imperial military college. As such, he new-modelled the Russian army. In 1734, he besieged and took Dantzic; was, on his return, sent to Warsaw to quiet the troubles which had broken out among the Poles, and, in 1735, made a campaign against the Turks. In this war, he laid waste the Crimea in 1736, conquered Otchakow in 1737, crossed the Dniester at Sinkowza, defeated the Turks at Stewutschan, took the fortress of Choczim, and occupied Moldavia. His further progress was stopped by the peace concluded between the German emperor and the Turks, which was followed by a peace between Russia and Turkey, September 18, 1739, at Belgrade. When Anna was on her death-bed, he induced her to appoint Ernest John, duke of Courland, regent of the Russian empire, and guardian of her successor, Ivan, during his minority, because he hoped in this way to become himself the virtual sovereign, while the duke was merely a nominal ruler. But being disappointed, he effected the downfall and imprisonment of the duke; after which the princess Anna, mother of Ivan, became the nominal regent. Munnich, not being able to become generalissimo, now had himself declared prime-minister, and, as such, effected a defensive alliance with Prussia. But the regent having formed a connexion with the courts of Vienna and Dresden, Munnich conceived himself injured, and demanded his dismission, in May, 1741. Having obtained it, he was on the point of going to Konigsberg, when he was arrested by the order of the princess Elizabeth (who, in December, 1741, had obtained forcible possession of the throne), and was condemned to death; but the sentence was commuted into the confiscation of his estates, and banishment to Pelim, in Siberia, where he remained till Peter III. recalled him, in 1762, and restored him to his former dignities. He died in 1767, aged eighty-four. He wrote *Ebauche pour donner une Idée de la Forme du Gouvernément de l' Empire de Russie* (Copenhagen, 1774).

MUNOZ, John Baptist, a Spanish historian, was born in 1745, at Museros, a village near Valencia, and studied in the university of Madrid. At the age of twenty-two, he wrote prefaces to the rhetoric of Louis of Grenada, and the logic of Vernei, both which displayed great erudition. He was appointed cosmographer of the Indies, in which situation, by order of the king, he began a history of America, of which he lived to publish only one volume, under the title of *Historia del Nuevo Mondo*. His other works, by which he acquired great reputation, are *De Scriptorum gentilium Lectione et profanarum Disciplinarum Studiis ad Christianæ Pietatis Normam exigendis* (Valencia, 1768); *De recto Philosophiæ recentis in Theologia Usu Dissertatio* (ibid. 1767); *Institutiones philosophicæ* (ibid. 1768); a Treatise on the Philosophy of Aristotle, &c. He died in 1799.

MUNSTER; the south-west province of Ireland, comprising the six counties of Waterford, Tipperary, Cork, Kerry, Limerick, and Clare, which see. See also *Ireland*.

MUNSTER; capital of the Prussian province Westphalia, see of a Catholic bishop, with a population of 20,837 inhabitants; lat. 51° 58′ N.; lon. 7° 36′ E. The fortifications are now converted into walks. Besides the cathedral, which contains numerous monuments of art, and the handsome church of St Lambert, on the tower of which are still seen the three iron cages, in which were suspended the remains of John of Leyden, Knipperdolling, and Krechting (1536), there are nine other churches, an episcopal palace, several hospitals and learned institutions. The Catholic university here was suppressed by the king in 1818, and its funds appropriated to the seminary for Catholic theologians (founded in 1824), to the gymnasium in Munster and Paderborn, and the seminary for Catholic priests. The gymnasium has a library of 25,000 volumes. Munster was anciently called *Meilend*, afterwards *Memingerode*, and finally received its present name from the splendid church and monastery (in German, *Munster*) erected by Charlemagne in the eighth century. In the sixteenth century, it was the theatre of the fanatical violence of the Anabaptists. In 1648, the peace of Westphalia was signed in the hall of the council-house, which still contains the portraits of the ambassadors present on that occasion.

MUNSTER, PEACE OF. See *Westphalia, Peace of.*

MUNTER, BALTHASAR, born at Lubeck in 1734, studied theology at Jena, was preacher to the orphan asylum in Gotha (1760), and afterwards to the German society of St Peter in Copenhagen, where he died in 1793. His sermons are esteemed for their practical character. He was also the author of *Geistliche Cantate* (1769) and *Geistliche Lieder.* Munter was appointed to prepare the unfortunate count Struensee for death, and wrote an account of his conversion, which was translated into almost all the European languages.—His son *Frederic*, bishop of Seeland and primate of the Danish church, born at Gotha in 1762, studied theology in the university at Copenhagen, and then spent two years at Gottingen. In 1783, he visited Italy and Sicily, resided some time in Rome, and, returning to Copenhagen, in 1788, was appointed extraordinary professor of theology, in 1790, ordinary professor in the university, in 1808, bishop of Seeland and knight of the Danebrog, and died in 1830. Among his numerous and learned works, the most important are his description of the Two Sicilies; *Specimen Versionum Danielis Copticarum* (Rome, 1786), from a manuscript discovered by him in Rome; Statutes of the Templars (also discovered by him); Religion of the Carthaginians (second edition, Copenhagen, 1821); Antiquarian Essays; *Miscellanea Hafnensia* (2 vols., 1816—25); Ecclesiastical History of Norway and Denmark (third vol. left in MS.); the Star of the Wise Men, containing investigations into the year of Christ's birth.—His daughter *Frederica Brun*, born at Tonna in 1765, married a Danish counsellor in 1783, is distinguished for her poetical and prose writings. In 1791, she travelled in France and Switzerland, and, in 1795, visited Italy, whither she again returned in 1805, and spent several years in Italy and Switzerland. Her travels are described in her *Episoden*, her *Briefe aus Rom*, &c. Her poems have also been published in three volumes.

MUNYCHIA; one of the ports of Athens, between the Pyræus and Sunium. See *Athens.*

MUNZER, or MUNTZER, THOMAS, a celebrated German fanatic, was born at Stolberg in the Hartz. If the tradition, that his father was illegally executed by a count, is true, this circumstance may account for the direction which his feelings afterwards assumed. He probably studied at Wittenberg, where he received the degree of master. He was afterwards a teacher at Aschersleben, and preached for several years in different places, every where displaying a violent enmity to the papacy. Luther's doctrines began about this time to spread widely, and men's minds were roused to shake off the papal yoke; but at the same time the spirit of fanaticism began to spread abroad. Whilst Luther was shut up on the Wartburg, and Carlstadt was committing the greatest violences in Wittenberg, the sect of Anabaptists was formed at Zwickau, by Klaus Storch, a clothier, with whom Mark Stubner, Martin Kellner, and Munzer associated themselves. They entered Wittenberg with their followers; but Luther attacked them with such force, that both Storch and Carlstadt were obliged to leave the city. Munzer promulgated his doctrines with more zeal and success at Altstedt in Thuringia, where he preached from 1523. He assailed the papacy and Luther with great violence, and excited the people to revolt against the authorities, particularly after they were forbidden to attend his preaching. He easily persuaded them that God would soon deliver Christendom from the yoke under which it groaned. His followers increased so rapidly, that Frederic, elector of Saxony, and John, duke of Weimar, summoned him to Weimar, to answer for his conduct, in 1524. Nothing further, however, was done, than to direct the authorities of Altstedt to remove so dangerous a person from the city. Munzer disappeared, and was not heard from again for a year, when he made his appearance at Nuremberg. Not being allowed to remain there, he went to Schaffhausen, where he continued six months, and then returned to Saxony. In Muhlhausen, he gained an entire ascendency over the populace, deposed the city council, which forbade his preaching, and appointed a new one, permitted the pillage of the monasteries and of the houses of the rich, and proclaimed a community of goods. Another fanatic, by the name of Pfeifer entered the Eichsfeld, with his troop of plundering followers, and joined Munzer. This event, and the information that 40,000 peasants had assembled in Franconia, and plundered and burned 150 castles of the nobles, and twenty-three monasteries, inflamed his zeal. He roused his adherents in Frankenhausen, the mountaineers of Mansfeld, and the peasants at Muhlhausen, Langensalza, and Tennstedt, and prepared for the war, promising his followers, that he would raise them all to the rank of nobility. Leaving Pfeiffer governor in Muhlhausen, he proceeded, with 300 chosen men, to Frankenhausen, broke off the negotiations which had been opened with the count of Mansfeld, and rekindled the ardour of the town's people. Frederic the Wise, elector of Saxony, was now dead, and his more energetic successor, John, associated himself with George, duke of Saxony, Philip, landgrave of Hesse, and Henry, duke of Brunswick, and sent a force against the insurgents, who amounted to about 8000 men, advantageously posted on a height near Frankenhausen, and protected by a barrier of wagons. The princes attempted to effect the peaceable submission of the revolters, but Munzer would not listen to terms, and was totally defeated, after an obstinate struggle, May 15, 1525. The insurgents lost from 5000 to 7000 killed, and the survivors threw themselves into Frankenhausen. Munzer concealed himself in bed, feigning sickness, but was accidentally discovered, and being carried to Heldrungen, confessed his accomplices on the rack. Pfeiffer, who attempted to flee from Muhlhausen, was also made prisoner. They were condemned, with twenty-four others, and executed at Muhlhausen. Munzer behaved with the greatest pusillanimity, and was unable even to pronounce the creed at the execution. After the decapitation, his body was impaled, and his head stuck upon a stake. See *Peasants' War.*

MURAL ARCH (from *murus*, a wall); a wall, or arched wall, placed exactly in the plane of the meridian, for fixing a large quadrant, sextant, or other instrument, to observe the meridian, altitude, &c., of the heavenly bodies.

MURAT, JOACHIM, the son of an innkeeper at Cahors, born in 1771, was a man of an elegant person, spirited and active, but distinguished for the most daring courage, rather than sagacity and strength of mind, and finally fell a sacrifice to his rashness. When a boy, he escaped from the college of Toulouse, where he had been placed to prepare him for the ecclesiastical profession. He was afterwards a common chasseur, and deserted; served in the constitutional guard of Louis XVI.; then entered the 12th regiment of mounted chasseurs; rose, by his zealous Jacobinism, to the rank of lieutenant-colonel;

was afterwards removed as a terrorist, and remained without employment till his fate placed him in connexion with Bonaparte, whom he accompanied as an aid to Italy, in 1796. Here he distinguished himself as a cavalry officer by his impetuous courage, and followed the general to Egypt. He decided the victory over the Turks at Aboukir, and returned with Bonaparte as general of division. On the 18th Brumaire, he expelled the council of five hundred from the hall of St Cloud, at the point of the bayonet, and in 1800 married Marie Annonciade Caroline (born in 1782), the youngest sister of the first consul. He was present at the battle of Marengo, and, in 1804, was made marshal of the empire, grand-admiral, and prince of the French empire. His services in the campaign of 1805, against Austria, in which he entered Vienna at the head of the army, were rewarded, in 1806, with the grand-duchy of Berg. The war of 1806 with Prussia, and of 1807 with Russia, where he followed up the victories of his master, with his cavalry, procured for him the distinction of occupying Madrid with a French army in 1808. Napoleon placed him on the throne of Naples, July 15, 1808. Murat, under the title of *king Joachim Napoleon*, governed with prudence and vigour, chiefly following the steps of Joseph. His attempt to conquer Sicily miscarried. His wife, a woman of sense and character, effected much good at home, while Murat himself was called to accompany Napoleon to Russia, at the head of all his cavalry. He was here defeated at Tarutina (October 18). Upon the retreat, Napoleon intrusted to him the command of the wreck of the army. The emperor accused him, in the *Moniteur*, of incapacity in this command. Murat returned to Naples full of indignation, and sought the friendship of Austria. He, however, once more fought with Napoleon, in the fatal campaign of Germany (1813). After the battle of Leipsic, he returned with his army to his kingdom, and negotiated for its preservation with Austria and Britain. The former actually concluded an alliance with him (June 11, 1814), to which Russia and Prussia acceded, in 1815; but Britain would only enter into a truce, since Ferdinand of Sicily, her ally, would receive no indemnification for Naples. The situation of Murat was consequently doubtful. He advanced with his army, in February, 1814, as far as the Po; but his hesitation in attacking the French excited the mistrust of Britain, as much as the hesitation of Britain to acknowledge him as an ally had excited his own suspicions. At the congress at Vienna, the Bourbons solicited for his dethronement, and Britain accused him of treachery. He took up arms, in 1815, for Napoleon, as was then thought, while he was yet negotiating at Vienna, and formed a plan to make himself master of Italy, as far as the Po. Towards the end of March, after Napoleon had entered France, he advanced with his army, partly by Rimini, partly by Rome, Florence, and Modena, attacked the Austrians, and called the Italians to independence, at the very time that Austria and the allies, upon his repeated assurances in March, that he would remain true to them against Napoleon, had determined to recognise him as king of Naples. It was too late. Austria, therefore, took the field against him. Forced to retreat at Ferrara by Bianchi (April 12), surrounded by Nugent, defeated by Bianchi at Macerata (or Tolentino) (May 2 and 3), Murat was deserted by the greater part of his army. May 19, he entered Naples as a fugitive. The country had now declared against him. He fled in disguise to the island of Ischia, from whence he sailed for France, and landed at Cannes, May 25. His family went on board the British fleet, and found in Austria protection and a home. Napoleon would not permit him to come to Paris. But he kept up a correspondence from Toulon with his adherents in Italy. After the overthrow of Napoleon, he escaped, in the midst of continual dangers, to Corsica, while his agent, Macirone, treated with the allies for a place of refuge for him. But, pursued as a rebel in Corsica, invited to return to Naples by his adherents and by traitors (see *Medici*), and encouraged to do so by several brave officers, who were devoted to him, he determined to sail, with 250 of his adherents, to Naples, to recover his lost throne. Every thing was prepared, when his aid, Macirone, brought an Austrian passport, and the permission to reside in Austria. It was too late. Murat set sail that very night (September 28), with six barks. A gale, on the 6th October, off the coast of Calabria, dispersed his fleet. Only two of the vessels entered the road of S. Lucido. Murat now wished to sail for Trieste, but the captain of his vessel declared that he must land for provisions. Murat then determined to go on shore. General Franceschetti and twenty-six soldiers attended him (October 8). But his declaration, "I am Joachim, your king," produced no effect. He was pursued. He forced his way back to the water, and leaped into a boat to go to his ship, but was seized and carried in chains to Pizzo, where he was brought before a court-martial, and condemned to be shot. The sentence was executed October 13. He met his fate with courage.—See the *Histoire des six derniers Mois de la Vie de Joachim Murat* (from the Italian of general Colletta, Neapolitan minister of war during the constitutional government, Paris, 1821); and general Franceschetti's *Mém. sur les Evenemens qui ont précédé la Mort de Joachim I.* (Paris, 1826). Murat's widow (see *Bonaparte*) is now called countess of Lipano, and lives upon the protection of Austria, near Trieste, where she has carefully educated her four children. Her second daughter was married (1825) to count Rusponi of Ravenna. His eldest son, Achille, who resided in Florida, author of *Lettres sur les Etats-Unis*, has returned to France.

MURATORI, Louis Anthony; a distinguished Italian antiquarian and historian. He was born at Vignola, in the Modenese territories, in 1672. Having adopted the ecclesiastical profession, and received the order of priesthood, he obtained some preferment in the church. In 1684, he was made keeper of the Ambrosian library at Milan, and, subsequently, librarian and archivist to the duke of Modena. His literary productions are voluminous and valuable; but his fame principally depends on his labours as an editor of the works of others. His works fill forty-six folio, thirty-four quarto, and thirteen octavo volumes. Among them are *Della perfetta Poesia Italiana* (1706, 2 vols., 4to); *Antiquitates Italicæ Medii Ævi* (1638, 6 vols., folio); *Novus Thesaurus Veterum Inscriptionum* (1739, 4 vols., folio); *Anecdota Latina* (4 vols., 4to); *Anecdota Græca* (4to); his great collection *Rerum Italicarum Scriptores ab Anno* 500 *ad* 1500 (27 vols., folio), of which the two supplementary volumes appeared after his death. He was also the author of *Annali d'Italia* (1744—1749, 12 vols., 4to, repeatedly republished in 18 vols., 8vo), *Dissertazioni sopra Antichità Italiane* (1751, 3 vols., 4to). Muratori died in 1750.

MURET, or MURETUS, Mark Antony; a learned French grammarian, so called from a village of the same name, in the neighbourhood of Limoges, where he was born in April, 1526. In his eighteenth year, he taught the languages at Villeneuve, and afterwards at Poictiers, Bourdeaux, and Paris. In the latter place, an accusation of an infamous nature caused him to be thrown into prison. At Toulouse, where he had settled, after obtaining his liberation, he taught jurisprudence for some time, when a second charge, of a similar nature, was brought against him, and, in 1554, he was condemned to be burned in effigy. He escaped to Padua, where, as well as at Venice, he continued to give public lectures till 1560, when he accepted an invitation given him by cardinal Ippolito d'Este to Rome. In 1563, he began to teach Greek and Latin, with philosophy and civil law, at Rome. In 1576, he took the vows, became a member of the college of Jesuits, and died in 1585. His works, consisting of orations, letters, poems, sacred hymns, &c.; *Variæ Lectiones*; four Disputations on the Pandects; On the Origin of Laws; *Carmina Juvenilia*, &c., all written with much purity and elegance, were collected in 1727 (Verona, 5 vols. 8vo). Another edition appeared at Leyden, in 1789 (4 vols.)

MURIATE OF BARYTES. See *Barytes*.

MURIATES, in chemistry; a genus of salts, formed from the muriatic acid with certain bases.

MURIATIC ACID. The name of this acid is derived from *muria*, the Latin name of sea salt, from which it is commonly extracted. It is also called, in commerce, the *marine acid*, and the *spirit of salt*. It is denominated the *hydro-chloric acid* by the French, in allusion to its composition. It is said to have been known as early as the time of Basil Valentine, though, as a gas, it was unknown till 1772, when it was obtained by Priestley, by heating the liquid acid, and receiving it in glass vessels filled with mercury. It is now procured in the gaseous form, from the decomposition of common salt by sulphuric acid, and may be collected without the use of a mercurial cistern, simply by delivering it from the gas-bottle through a narrow tube, at the bottom of a vial or jar: the gas, being of a specific gravity of 1·259, displaces the air, and completely occupies the vessel. If an inflamed taper be immersed in it, it is immediately extinguished. It is destructive of animal life; but the irritation produced by it on the epiglottis scarcely permits its descent into the lungs. It is merely changed in bulk by alterations of temperature, but experiences no change of state. It is composed of hydrogen and chlorine, in the ratio, by weight, of thirty-six of the latter to one of the former. It is absorbed with great rapidity by water. A bottle full of the gas, if opened in water, is almost instantaneously filled. Water absorbs about 500 volumes of this gas; and the solution, when cold, has the density of 1·1958, and consists of 40·39 real acid, and 59·61 water. The common process for obtaining liquid muriatic acid is the following: common salt, sulphuric acid and water, equal weights; the acid being mingled with one third of water, and, when cold, poured on the salt; the gas evolved is conducted through reservoirs of water, and subjected to pressure in contact with it. The specific gravity of the acid thus obtained is 1·17. It is always slightly tinged with yellow, from the presence of muriate of iron, derived from the vessels employed in the process. At the specific gravity of 1·203, it boils at 107°. It combines, like the other powerful acids, with the alkalies, earths, and metallic oxides, forming a very peculiar class of salts. Muriatic acid is a valuable article of the *materia medica*. It is particularly used in cases of dyspepsia that are attended with morbid secretions, also in hepatic derangements and cutaneous diseases. It is also of considerable value as a disinfecting agent.

MURILLO, Bartolomeo Esteban, the greatest of all the Spanish painters, was born at Seville, Jan. 1, 1618. He received his first instructions in the art from his relation, Juan del Castillo; but the latter having gone to settle at Cadiz, Murillo was obliged for subsistence to paint banners and small pictures for exportation to America. In that business, he obtained full employment, and began to distinguish himself as an able colourist. He was still very young, when he happened to see some works of Pedro de Moya, who was passing through Seville, on his way to Cadiz, which, being painted in the style of Vandyke, inspired him with the desire of imitating that great artist, under whom De Moya had studied shortly before his decease. The time he was able to avail himself of Moya's instruction was very short, and he resolved afterwards to repair to Italy for improvement. But his means were totally inadequate to meet the expenses of such a journey. Collecting, however, all his resources, he bought a quantity of canvass, divided it into a number of squares, upon which he painted subjects of devotion and flowers, and, with the produce of the sale of these, set out upon his journey, unknown to his relations and friends. On his arrival at Madrid, he waited upon Velasquez, his countryman, and communicated his plans to him. Struck with the zeal and talents of the young artist, Velasquez treated him with the greatest kindness, and diverted him from his project of the journey to Rome, by procuring him full employment at the Escurial, and in the different palaces of Madrid. Murillo returned to Seville in 1645, after an absence of three years. The following year, he finished painting the little cloister of St Francis; and the manner in which he executed it produced the greatest astonishment among his countrymen. His picture of the death of Santa Clara, and that of St James distributing Alms, crowned his reputation. In the first he showed himself a colourist equal to Vandyke, and, in the second, a rival of Velasquez. They obtained him a multitude of commissions, which procured him an independent fortune. His success, however, never led him to be careless. He gradually perfected his manner, by giving more boldness to his pencil, without abandoning that sweetness of colouring which distinguished him from all his rivals, increasing its strength, and giving greater freedom to his touch. He enriched the churches and convents of Seville, and other cities, with numerous works. Having been invited to Cadiz, to paint the grand altar of the Capuchins, he there executed his celebrated picture of the Marriage of St Catharine. As he was about to finish it, he wounded himself so dreadfully on the scaffolding, that he continued to feel the effects of the injury until his death, at Seville, in April, 1682. To the greatest merit as an historical painter, Murillo joined equal excellence in flowers and landscape. His works afford proofs of the perfection to which the Spanish school had attained, and the real character of its artists; for, as Murillo never quitted his native country, he could not be influenced by any foreign style; and his originality of talent places him in the first rank among the painters of every school. He has neither the charming dignity of Raffaelle, the grandeur of Caracci, nor the grace of Correggio; but, as a faithful imitator of nature, if he is sometimes vulgar and incorrect, he is always true and natural; and the sweetness, brilliancy, freshness, and harmony of his colouring, make us forget all his defects.

MURPHY, Arthur, a dramatic writer, born in Ireland, 1727, was sent, at the age of ten, to the college of St Omer, where he remained six years, and, on his return, was employed in the counting-house of his uncle, who intended to make him superintendent of an estate in Jamaica; but his inclination being averse to this destination, he repaired to his mother, then resident in London. At first, he accepted a situation in a banking-house, but was soon altogether engrossed by literature. In October, 1752, he published the first number of the Gray's Inn Journal, a literary periodical, and first essayed his dramatic powers in the farce of the Apprentice, which was followed by the Upholsterer. He soon after made an attempt as an actor, in the character of Othello, and held an engagement with Foote for a single season, and then retired. On quitting the stage, he determined to study the law, and was admitted a barrister by the society of Lincoln's Inn, in 1757. In 1759, he produced the Orphan of China, from the tragedy of Voltaire, and a variety of other pieces, of tragedy, comedy, and farce, for the groundwork of which he was generally indebted to some foreign original. Of these, the Grecian Daughter, the Way to keep him, All in the Wrong, and Know your own Mind, still keep the stage. In 1788, he retired altogether from the bar, and occupied himself entirely for the press. In 1792, appeared his Essay on the Life and Genius of Doctor Johnson; and, in 1793, he published his translation of Tacitus, with historical supplements. In 1798, appeared his tragedy of Arminius; and his warmth in favour of the then pending war obtained him a pension of £200 per annum. He died in June, 1805, in his seventy-eighth year. One of his latest works was a life of Garrick; and a translation of Sallust has appeared since his death.

MURRAIN, or GARGLE; a contagious disease among cattle, principally caused by a hot, dry season, or general putrefaction of the air, which begets an inflammation of the blood, and a swelling in the throat, that soon proves mortal. The symptoms are a hanging down and swelling of the head, abundance of gum in the eyes, rattling in the throat, a short breath, palpitation of the heart, staggering, a hot breath, and a shining tongue.

MURRAY, Lindley, author of the most useful and popular grammar of the English language, was born in the year 1745, at Swatara, near Lancaster, in the state of Pennsylvania, of Quaker parents, in the middle station of life, he received the rudiments of his education at Philadelphia, in the academy of the society of Friends. In 1753, his father removed, with his family, to New York, where Lindley was placed at a good school. At an early age he entered a counting-house, being destined for the mercantile profession; but, having been severely chastised for a breach of domestic discipline, he privately left his father's house, took up his abode in a seminary at Burlington, New Jersey, and there contracted a love of books and study. When brought back, after some time, he prevailed upon his father to procure a classical tutor for him, under whom he applied himself with diligence and success. From the precepts and example of his parents, he imbibed lasting sentiments of morality and religion. He now undertook the study of the law in the office of an eminent counsellor, the celebrated John Jay being his fellow-student. At the age of twenty-one or twenty-two, he was called to the bar, and soon obtained practice. Within two years, he married a lady, with whom he lived in the tenderest union for more than half a century. He was very successful and sedulous in his business as a lawyer, until the war broke out between Great Britain and the colonies. About that time, the decline of his health induced him to remove into the country, about forty miles from New York. In this retreat he passed four years; and, at the expiration of this time, he was driven back to the city (then in possession of the British) by the necessity of procuring funds for the subsistence of his family. The profession of the law being no longer lucrative, he turned merchant again, and accumulated property enough to enable him to retire from business, about the period of the establishment of American independence. He then purchased a beautiful country-seat, on the banks of the river Bellevue, about three miles from New York; but a severe sickness subjected him to a general debility of the muscles, for the cure of which he was induced to go, with his family, to England. He intended to remain there only two years; but the local attachments which he formed and his bodily infirmities, detained him for the rest of his life. He bought a very pleasant estate at Holdgate, about a mile from the city of York. Here rendered sedentary by the weakness of his muscles, he gave himself chiefly to reading and composition. His first book is entitled the Power of Religion on the Mind, &c., and appeared in 1787. It was anonymous, gained much reputation, and has passed through seventeen editions. His Grammar was first issued in 1795. It was greatly enlarged and improved in successive editions, and has not yet been surpassed or superseded. It is still, altogether, the best extant, of the English language. It was succeeded by his English Exercises and Key, intended to correspond with, and illustrate, the Grammar; abridgments of which treatises were published in 1797, and met with an extensive sale, which they still maintain. His next work was a compilation, entitled the English Reader, also extensively used. In 1802, he produced a French compilation of the same kind, entitled *Lecteur Français*, and, subsequently, an *Introduction au Lecteur Français;* and, in 1804, an English Spelling Book. He also published a Selection from Horne's Commentary on the Psalms, and the Duty and Benefits of Reading the Scriptures. His publications were lucrative, and acquired public favour, both in Great Britain and the United States. In 1809, he finished interesting Memoirs of his life, printed since his decease. He lived upwards of sixteen years from that period, a martyr to bodily infirmities and diseases, which he bore with the most exemplary fortitude and Christian serenity. He expired Feb. 16, 1826, in his eighty-first year. He had been a highly useful labourer for education, and was a man of a very amiable character.

MURRAY, William Vans, distinguished in the annals of American diplomacy and oratory, was born in Maryland about the year 1762. Having received a classical education, he went to London, after the peace of 1783, and resided there three years, as a student of law in the Temple. He published, in the British capital, a pamphlet on the Constitutions and Laws of the United States, suggested by the observations of Price, Turgot, and Mably, which was much commended. About 1785, he returned to Maryland, where he engaged in the practice of the law; but his general reputation and merits caused him to be soon called to the councils of his country. He was first elected a member of the legislature of Maryland. For upwards of six years (from 1790 to 1797), he held a seat in the house of representatives of the United States. Few of that body equalled him in eloquence, or the other qualifications of a member of a deliberative assembly. His name ranks with the most conspicuous in the legislative annals of that period. In 1797, he declined a re-election to congress, having too long neglected his private affairs. One of the last acts of general Washington, as president of the United States, was the appointment of Mr Murray as minister plenipotentiary to the Batavian republic. The minister arrived at the Hague at a crisis when abilities, zeal, and address such as his were required, to counteract the unfriendly influence of France over the Batavian government. He succeeded in preserving harmony between the American and Batavian republics; and the first advances to a reconciliation between the United States and France were made in the intercourse of the French *charge d'affaires*, at the Hague, with Mr Murray. Proposals being made for a direct negotiation, they were accepted by Mr Adams, then president of the United States, who appointed Mr Murray sole envoy extraordinary to the French republic, for the purpose. Afterwards, judge Ellsworth and governor Davie were associated with him. The story of this negotiation is one of the most remarkable portions of the civil history of the United States. Mr Murray assisted in making the convention, which was signed at Paris, September 30, 1800, between this country and France. He returned to his station as minister resident at the Hague, and, in December, 1801, to his country. His health being much impaired, he retired to his seat in Cambridge, on the eastern shore of Maryland. A rapid consumption of the lungs was the cause of his death, in 1803, in the forty-second year of his age. He was one of the most accomplished and gifted of American gentlemen.

MURRAY, William. See *Mansfield, Earl of.*

MURRINE, or MURRHINE VASES (*vasa murrhina*); splendid antique vessels, which were equally distinguished for the costliness of their material, and the beauty of their execution. They were brought, by Pompey, from Asia to Rome, after his victory over Mithridates, and bore an immense price. Some antiquarians have supposed them to have been made of a mineral of the class of sardonyx or agate, or of Chinese steatite; others, of a kind of porcelain or glass. It is most probable, that there were vessels of this kind, of natural as well as artificial materials; and that, being similar in their exterior, they were easily confounded with one another, and acquired a common appellation. Of the first kind is the famous *Mantuan vase*, so called, in the museum at Brunswick; the well-known Barberini, now Portland vase (q. v.), in the possession of the duke of Portland, is a specimen of the latter kind.

MURTEN. See *Morat.*

MURVIEDRO. See *Morviedro.*

MUSÆUS, a celebrated poet of mythological antiquity, was born at Athens. Some call him the son of Eumolpus and the Moon; others, of Linus or Orpheus. He was probably called the son of Orpheus because he was his follower and pupil. He was not only a poet, but also a philosopher, and is said to have introduced religious ceremonies, according to the instructions of Orpheus, particularly into the Eleusinian and other mysteries. The ancients attribute to him many works, of which some verses only have come down to us.

A later Musæus, who probably lived four or five centuries after Christ, is the author of an erotic poem of the loves of Hero and Leander (Heinrich's edition, Hanover, 1793; Passow's, with a translation, Leipsic, 1810.)

MUSAGETES (*leader of the Muses*); an appellation of Apollo, which belongs to him as the patron and instructor of the Muses. In later times, this appellation is oftener given to Hercules, in inscriptions on gems, &c., and also by authors.

MUSAUS, John Charles Augustus, was born at Jena, studied theology there, and was to have become a parish priest, near Eisenach, but was objected to by the peasants, because he had once danced. Richardson's Grandison was very popular at that time, and Musaus published a satirical parody, under the title of Grandison the Second, which was well received. He was afterwards master of the pages at the Weimar court, and, in 1770, appointed professor in the gymnasium at Weimar. His next production was a satire on the extravagances of the physiognomists,—Physiognomical Travels. His German Popular Tales (1782; since edited anew by Wieland and Fred. Jacobs); his *Freund Heins Erscheinungen in Holbeins Manier* (1785); and a new series of tales, under the title *Straussfedern* (of which only the first volume was from his pen), are among his productions. He died in 1787.

MUSCADINE, MUSCADEL, MUSCATEL (from the Italian *moscadello*, on account of its flavour); a kind of sweet wine. Of the Italian, the best sorts are the Syracusan, the Moscato, Giro, and Cannanao of Cagliari; the Muscat of Algheri, and Oliastra in Sardinia. The best French muscadels, are those of Rivesaltes and Lunel; after which, rank the Frontinac and the Montbabin. Cyprus and Candia also yield muscadel.

MUSCLE. (*musculus.*) The parts that are usually included under this name consist of distinct portions of flesh, susceptible of contraction and relaxation; the motions of which, in a natural and healthy state, are subject to the will; and, for this reason, they are called *voluntary* muscles. Besides these, there are other parts of the body that owe their power of contraction to their muscular fibres; thus the heart is a muscular texture, forming what is called a *hollow* muscle; and the stomach, intestines, &c., are enabled to act upon their contents, merely because they are provided with muscular fibres; these are called *involuntary* muscles, because their motions are not dependent on the will. The muscles of respiration being, in some measure, influenced by the will, are said to have a *mixed* motion. The names by which the voluntary muscles are distinguished, are founded on their size, figure, situation, use, or arrangement of their fibres, or their origin and insertion; but, besides these particular distinctions, there are certain general ones that require to be noticed. Thus, if the fibres of a muscle are placed parallel to each other, in a straight direction, they form what anatomists term a *rectilinear* muscle; if the fibres cross and intersect each other, they constitute a *compound* muscle; when the fibres are disposed in the manner of rays, a *radiated* muscle; when they are placed obliquely with respect to the tendon, like the plume of a pen, a *penniform* muscle. Muscles that act in opposition to each other are called *antagonists;* thus every extensor has a flexor for its antagonist, and *vice versa.* Muscles that concur in the same action, are termed *congeneres.* The muscles being attached to the bones, the latter may be considered as levers, that are moved in different directions by the contraction of those organs. That end of the muscle which adheres to the most fixed part is usually called the *origin;* and that which adheres to the more movable part, the *insertion* of the muscle. In almost every muscle, two kinds of fibres are distinguished; the one soft, of a red colour, sensible and irritable, called *fleshy* fibres; the other, of a firmer texture, of a white, glistening colour, insensible, without irritability, or the power of contracting, and named *tendinous* fibres. They are occasionally intermixed, but the fleshy fibres generally prevail in the *belly* or middle part of the muscle, and the tendinous ones in the extremities. If these tendinous fibres are formed into a round, slender cord, they form what is called the *tendon* of the muscle; on the other hand, if they are spread into a broad, flat surface, it is termed an *aponeurosis.* The fibres that compose the body of a muscle are disposed in *fasciculi*, or bundles, which are easily distinguishable by the naked eye; but these *fasciculi* are divided into still smaller ones; and these, again, are probably subdivisible *ad infinitum.* The most minute fibre we are able to trace seems to be somewhat plaited; these plaits, disappearing when the fibre is put upon the stretch, seem evidently to be the effect of contraction, and have probably induced some writers to assert, that the muscular fibre is twisted or spiral. A fibre is essentially composed of *fibrine* and *ozmazome* receives a great deal of blood, and, at least, one nervous filament. By chemical analysis, muscle is found to consist chiefly of fibrin, with albumen, gelatine, extractive, phosphate of soda, phosphate of ammonia, phosphate and carbonate of lime, and sulphate of potassa. Each muscle is surrounded by a thin and delicate covering of cellular membrane, which, dipping down into its substance, encloses the most minute fibres we are able to trace, connecting them to each other, lubricating them by means of the fat which its cells contain, in more or less quantity in different subjects, and serving as a support to the blood-vessels, lymphatics, and nerves, which are distributed through the muscles. The muscles owe the red colour which so particularly distinguishes their belly part, to an infinite number of arteries, which are everywhere dispersed through the whole of their reticular substance; for their fibres, after having been macerated in water, are (like all other parts of the body divested of their blood) found to be of a white colour. The veins, for the most part, accompany the arteries, but are larger and more numerous. The lymphatics are numerous, as might be expected from the great proportion of reticular substance, which is everywhere found investing the muscular fibres. The nerves are distributed in such abundance to every muscle, that the muscles of the thumb alone receive a greater proportion of nervous influence than the largest viscera. See *Muscular Motion.*

MUSCOVY. See *Russia.*

MUSCULAR MOTION. Muscular motions are of three kinds, namely, voluntary, involuntary, and mixed. The *voluntary motions* of muscles proceed from an exertion of the will: thus the mind directs the arm to be raised or depressed, the knee to be bent, the tongue to move, &c. The *involuntary motions* of muscles are performed by organs, without any attention of the mind, as the contraction and dilatation of the heart, arteries, veins, absorbents, stomach, intestines, &c. The *mixed motions* are those which are in part under the control of the will, but which ordinarily act without our being conscious of their acting; and are perceived in the muscles of respiration, the intercostals, the abdominal muscles, and the diaphragm. When a muscle acts, it becomes shorter and thicker; both its origin and insertion are drawn towards its middle. The sphincter muscles are always in action; and so likewise are antagonist muscles, even when they seem at rest. When two antagonist muscles move with equal force, the part which they are designed to move remains at rest; but if one of the antagonist muscles remains at rest, while the other acts, the part is moved towards the centre of motion. When a muscle is divided, it contracts. If a muscle be stretched to a certain extent, it contracts, and endeavours to acquire its former dimensions as soon as the stretching cause is removed. When a muscle is wounded, or otherwise irritated, it contracts independently of the will: this power is called *irritability*, and it is a property peculiar to, and inherent in the muscles. When a muscle is stimulated, either through the medium of the will, or any foreign body, it contracts, and its contraction is greater or less in proportion as the stimulus applied is greater or less. The contraction of muscles is different, according to the purpose to be served by their contraction: thus the heart contracts with a jerk; the urinary bladder, slowly and uniformly. The intensity of muscular contraction, that is, the degree of power with which the fibres draw themselves together, is regulated by the action of the brain: it is generally regulated by the will, according to certain limits, which are different in different individuals. A particular organization of the muscles is favourable to the intensity of their contraction: this organization is a considerable volume of fibres, strong, of a deep red, and striated transversely. The cerebral influence, and the disposition of the muscular tissue, are the two elements of the intensity of muscular contraction. A very great cerebral energy is rarely found united, in the same individual, with that disposition of the muscular fibres which is necessary to produce intense contractions: these elements are almost always in an inverse ratio. When they are united, they produce astonishing effects. Perhaps this union existed in the *athletæ* of antiquity; in our times, it is observed in certain mountebanks. The muscular power may be carried to a wonderful degree by the action of the brain alone: we know the strength of an enraged person, of maniacs, and of persons in convulsions. The will governs the duration of the contraction: it cannot be carried beyond a certain time, however it may vary in different individuals. A feeling of weariness takes place, not very great at first, but which goes on increasing until the muscle refuses contraction. To prevent this inconvenience, the motions of the body are so calculated that the muscles act in succession, the duration of each being but short: our not being able to rest long in the same position is thus explained, as an attitude which causes the contraction of a small number of muscles, can be preserved but for a very short time. The feeling of fatigue occasioned by muscular contraction soon goes off, and, in a short time, the muscles recover the power of contracting. The quickness of the contractions are, to a certain degree, subject to cerebral influence: we have a proof of this in our ordinary motions; but beyond this degree, it depends evidently on habit. In respect to the rapidity of motion, there is an immense difference between that of a man who touches a piano for the first time, and that which the same man produces after several years' practice. There is, besides, a very great difference in persons, with regard to the quickness of contractions, either in ordinary motions, or in those which depend on habit. As to the extent of the contractions, it is directed by the will; but it must necessarily depend on the length of the fibres, long fibres having a greater extent of contraction than those that are short. The will has generally a great influence on the contraction of muscles; it is not, however, indispensable: in many circumstances motions take place, not only without the participation of the will, but even contrary to it: we find very striking examples of this in the effects of habit, of the passions, and of diseases.

MUSES; goddesses of the liberal arts and sciences; originally, nymphs of inspiring fountains. Different accounts are given of their origin. There is, also, a great difference in their names and attributes. The most celebrated are the daughters of Jupiter and Mnemosyne, also called Moneta, Memoria, and Mens. Their foster-mother was Eupheme. According to Homer, they lived upon Olympus. They originated in Pieria, in Thrace; from thence they came to Bœotia, and afterwards spread over the rest of Greece. The explanation of this probably is, that the art of singing was considered as having been first cultivated in the north of Greece. At first, three muses only were known: Melete (meditation), Mneme, or Arche (memory, for the immortalizing of great deeds), and Aoide (song, for the accompaniment of story); Cicero mentions a fourth, Thelxiope (*De Natura Deorum*, iii. 21). Finally, Pierus, a Macedonian, brought nine muses to Thespia, who were considered as his daughters, and hence, according to Pausanias, called *Pieridæ* (Pierians). Others derive this name from Pieria, on Olympus, where they were first worshipped. Their names were Clio, Euterpe, Thalia, Melpomene, Terpsichore, Erato, Polyhymnia, Urania, and Calliope. The poets feign that Jupiter spent nine nights with Mnemosyne, in Pieria, and, in that period, begot the nine Muses. Immediately after their birth, they came, singing and dancing, to Olympus, where Jupiter exalted them to a divine rank. Not far from the top of Olympus is their palace, near that of the Graces, where they sing and dance. They are commonly represented as virgins, though children of the Muses are sometimes mentioned. Even Urania is called, by Eustathius, the mother of Linus. Among the adventures of the Muses, their three contests with the Sirens, the daughters of Pierus, and the old bard Thamyris, are particularly famous. The Sirens were conquered: the muses plucked the feathers from their wings, and made garlands out of them for themselves, while the Sirens flew away, ashamed, in the shape of prating magpies. When the Muses contended with them in song, the heaven, the stars, the rivers, and the sea stood still, and mount Helicon leaped for joy, and Neptune, to prevent it from mounting to the heavenly regions, despatched Pegasus, who struck his foot upon the summit of the mountain; at the song of the unfortunate Pierides, black darkness covered the fields. The bard Thamyris, who contended with them, stipulated that, should he come off victorious, each of them should yield to his embraces one night; but, should he be conquered, they might impose upon him whatever punishment they pleased. They were victorious; and, as a punishment for his audacity, deprived him of his eyes and of the art of playing upon the lyre. A certain tribe, says tradition, listened to the singing of the Muses with so much pleasure that they forgot their food, and, being on the point of perishing with hunger, were in compassion converted by the Muses into grasshoppers, who sing continually, without requiring (as it was believed) any nourishment. The customary occupation of the Muses was singing and dancing. The ancients knew nothing of the particular occupations which have, in later times, been attributed to each of their number. Calliope became the goddess of epic poetry. She was the most distinguished among the Muses, the protectress of kings, whom she endowed with eloquence and song. Clio was the goddess of history; Euterpe, of music, particularly of wind-instruments; Thalia, of comedy; Melpomene, of tragedy; Urania, of astronomy; Erato, of lyric and erotic poetry; Polyhymnia, of eloquence and mimicry; and Terpsichore, of the dance. If we translate their names, Erato signifies the *lovely;* Calliope, the *eloquent;* Euterpe, the *pleasing;* Thalia, the *joyous,* particularly at feasts; Melpomene, the *musical;* Polyhymnia, *variety of song;* Terpsichore, the *dance-loving;* and Clio, *fame.* (*See the separate articles.*) Their surnames are, for the most part, derived from their places of residence,—Helicon, Pindus, Parnassus, and the sacred fountains there (hence *Castalides, Pimpleides,* &c.). They are commonly represented as beautiful virgins, adorned with wreaths of palm leaves, laurel, roses, or the feathers of the Sirens. They dance in a circle, together with Apollo. (See *Museum Pio-Clementinum,* vol. 1. plates 17—28, and vol. 4. plates 14, 15.) Their worship extended from Greece to Italy: the Romans originally called them *Camœnæ.* In Rome, they had a separate temple, and a grove sacred to them. The swan, the nightingale, and the grasshopper were also sacred to them. They had a knowledge of past ages, and were invoked, by poets, at the commencement of their lays.

MUSEUM. Every collection of interesting objects, of nature or art, brought together for the instruction of the student, or the satisfaction of the curious, is called a *museum,*—a word which originally signified a grotto of the Muses, or a temple of the Muses, and which was first given in the above sense to that part of the royal palace in Alexandria, which Ptolemy Philadelphus assigned for the library. Works of the fine arts, collected in museums, cannot produce the same effect as when in the places for which they were originally intended. When the images of Hercules, Hermes, and Cupid, stood in the gymnasia; when Alcamenes' statues of Venus were half hidden by bowers and trees; when the figures of Diana, with her nymphs, were found in lonely forests; Myron's groups of the Nereides, on the sea-shore; the statues of Apollo, Bacchus, and the Muses, in the theatres; the lofty image of Jupiter, at the Olympian games; or, in more recent times, when the picture of the Virgin stood over the altar, surrounded by columns and arches, —then the works of art were in their proper places, and produced the effect for which the artist intended them. But a deluge of barbarism swept over the civilization of ancient times, and the works of ancient art were hurled from their seats. When the light of civilization again dawned upon Europe, it was natural for men to seek with avidity for the relics of ancient art; and, as the changes which had taken place in religion and in social institutions forbade the restoration of them to their old uses, they were treasured up in collections, as proofs of the existence of a perfection which mankind had long lost. But this spirit of collecting may be carried, and has been carried, to an extreme. In the last century, particularly, the governments of many countries thought themselves authorized to despoil all the provinces of the few works of art which they had preserved, and to crowd them, often without any taste, in collections, into the capital. Of late, the mode of arranging museums has been greatly improved, the works of art being disposed in situations corresponding to their character; at least, this has been the case with some museums of works of sculpture, of which the *Glyptotheca* (q v.) and the new and grand museum at Berlin are honourable examples. We find the first collections of works of art in the peristyles of ancient temples. Delphi, with its treasure chambers, divided according to the different tribes of Greece; the temple of the Samian Juno and the Palladian Acropolis at Athens were very rich in works of art, consisting of consecrated gifts, arranged with taste. The successors of Alexander accumulated all kinds of works of art in their royal seats, in order to carry them about at their triumphs in long processions. Similar was the fate of foreign works of art in ancient Rome. The captured statues were carried about like slaves; and among the Roman emperors there was more than one imitator of Nero, who ordered five hundred statues to be sent from Delphi, to ornament his "golden house." The practice of removing works of art from their original localities had therefore already begun; real museums, however, existed not as yet. The barbarians afterwards broke in upon Rome, and the works of art were involved in indiscriminate destruction. The finest marbles were used for building walls; the noblest statues were burned for lime. Hardly a single statue or picture escaped, except those which were buried under the ruins, and thus preserved by the very extent of the surrounding destruction, to kindle, in future ages, a new love for the fine arts. In the beginning of the fifteenth century, only about five antique statues of marble, and one of bronze, were known to exist in Rome. In Florence began the dawn of a new day for the fine arts, in the age of the Medici. (q. v.) Cosmo I. collected antiques, and laid the foundation of the famous Florentine museum. Other princes of Italy soon followed the example. Pope Leo X., of the family of Medici, transplanted the love of the fine arts, which distinguished his house, to Rome. The villa of the Medici, on Monte Pincio, became the place in which antique works of arts, which had been hidden where destruction had not been able to reach them, were concentred. The noble families of Rome, and, by degrees, of all Italy, were inspired with a kindred zeal, and so every where commenced excavations, in order to find ornaments for their villas and palaces. Collections of coins were first made. The family of Este made the first collection of gems. Afterwards came collections of busts; yet these, as well as statues, were used in preference as ornaments in festival halls, in gardens, and yards (*cortili*), instances of which are the *cortile* in the Belvedere, and the villas in and near Rome. The arrangement of the antiques in the nine *stanzas* of the Villa Borghese was beautiful. This, we regret to say, could not be re-established when the other works of art returned to Italy, for these antiques were bought by France, and not carried off by force. Museums now became more and more common, and works were crowded together without taste and convenience. As the erudition of the Alexandrian scholiasts, though valuable, is not of equal worth with the poetry of Homer, so museums, though certainly noble establishments, and necessary to keep alive a taste for the fine arts, are not to be compared with the living activity of art; and it is gratifying to see that the effect of museums at present is to awaken genius to original production, instead of making mere copyists of ancient creations, as was once the case, when modern art seemed to be rather a matter of erudition than the offspring of native inspiration.

The most famous museum in Italy is the museum in the Vatican, which occupies almost all the rooms of that immense palace, and includes pictures, statues, *relievi*, books, and manuscripts. The *stanze* and *loggie* contain the famous fresco pictures of Raphael. In the *cortile* are the Apollo and Laocoon, with many other of the noblest productions in which man ever expressed his love for the beautiful. Raphael's Transfiguration, his Madonna di Foligno, and most of the celebrated pictures which had been carried to Paris, were placed here after their return.—See the article *Vatican;* also the work entitled *Museo Pio-Clementino*, and the continuation of it, *Il Museo Chiaramonti*, with illustrations by Visconti and Guattani, edited by Ant. d'Este and Gaspare Capparone (Rome, 1808, fol.)

The museum at Florence (q. v.) is next in rank after the Vatican. Its greatest ornaments are the Medicean Venus and the Farnesian Hercules. The museum in Paris, at the time when all the greatest treasures of the arts of almost all ages and all countries were accumulated there, was the richest in the world. It is even now exceedingly rich. The superb Diana, the true sister of the divine Apollo Belvedere, the majestic Pallas of Villetri, and the colossal tragic muse, are its greatest ornaments. As in France galleries of pictures also are understood by the name *musée*, we must mention here the magnificent gallery of the Louvre, the greatest treasures of which, at present, are the pictures of Raphael and Leonardo, purchased by Francis I., the works of Poussin, Lebrun, Lesueur, and the pictures of the former gallery of Luxemburg, by Rubens.—See count Clarac's *Musée de Sculpture antique et moderne* (Paris, 1826, with engravings.)

Besides these, there is the *musée des monuments Français*, established by Lenoir, in 1796, with the permission of the national convention. It was begun in 1790, and opened to the public in 1791, at a time when the fury of the people, excited by existing abuses, attacked indiscriminately all monuments of the previous order of things. It was composed of seven great saloons, chronologically disposed, so that the works of each period stood by themselves. A garden attached to the museum contained those monuments which were too large for the rooms. In 1816, this museum was broken up, and the monuments restored to their former situations. M. Molard established the *conservatoire des arts et métiers*, containing a very full collection of machines, &c. The *Jardin du Roi* contains the *musée d'histoire naturelle,* which owes so much to Buffon.

In Britain, the Oxford museum is the oldest. It was founded in 1679, and owes a great part of its treasures to Elias Ashmole, whose name it bears. The British museum, in London, is continually increasing by means of donations and purchases. Sir Richard Cotton (q. v.) laid the foundation of it by his valuable collection of manuscripts. Since that time, the government has frequently made additions to it by purchase. See *British Museum.*

No country has more museums than Germany. In Dresden are the collection of antiques, called the *Augusteum*, the greatest ornaments of which are the three female figures of Herculaneum, the gallery of pictures, with Raphael's great master-piece, the Madonna di Sisto, and Correggio's Night, and the museum of casts in gypsum, collected by Mengs. (See *Dresden*). Munich has the *Glyptotheca* (q. v.); and a similar building has lately been erected for the reception of pictures, the collection of which is considerable. Guido's Ascension of the Virgin is the most distinguished of them, and the Dusseldorf collection, and that of the brothers Boisserée, have greatly enhanced their value. Still larger and finer is the new museum at Berlin, lately finished, and containing works of sculpture, coins, gems, Egyptian monuments, &c. The building itself, with its fresco paintings, is a splendid work of art. In the other cities of Prussia, museums are likewise erecting. Darmstadt, Gotha, Cassel, Brunswick, Dessau, Vienna, &c., contain museums more or less distinguished. Llorente has communicated some information on the collections in Spain. That country has been too much agitated, of late, to bestow much attention on the fine arts, or collections of works of art. In Turin, an Egyptian museum, opened in 1824, contains Egyptian antiquities, obtained by Drovetti. Amad. Peyrou published the *Papyri Græci Musei Taurinensis*. Milan has been growing richer every day in coins. In Brescia, a museum of antiquities was established in 1827, shortly after a temple, with many statues, had been excavated. The *museo Borbonico*, at Naples, is increased by the treasures found in the subterranean cities. The most important treasures of this museum are made known to the public at large by Niccolini's *Real Museo Borbonico,* published since 1824, in numbers. It will form sixteen volumes, and a catalogue of two volumes will contain the less important works. Niccolini gives, at the same time, information respecting the history of the excavations in Pompeii.—Respecting St Petersburg, see Hand's *Description* (Weimar, 1827, 1 vol.), and Miliotti, on the gems of that capital, Vienna, 1807). Several private collections at Petersburg, and in other places of the Russian empire, are not important. Copenhagen has valuable collections, affording interesting illustrations of northern antiquities. (See *Copenhagen.*) The Greek government, some time since, issued a decree, commanding all antiquities found in the interior to be brought to the national museum, in order to preserve them from future destruction, and also to prevent their exportation.*

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* It already consists of 1090 painted vases (of various forms and descriptions), 108 lamps, and 24 smaller statues of terra-cotta, 16 small earthen vessels, 19 glass vases, 34 alabaster vases, 137 copper utensils (comprising *pateræ*, and other sacrificial vessels), 71 stone tablets (with inscriptions), 24 statues, 14 bass-reliefs, 53 fragments of sculpture, and 339 coins and medals.

MUSHROOM. See *Fungi*.

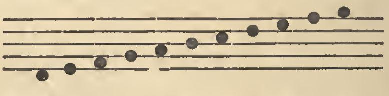
MUSIC. The Greeks understood by *music* (μουσικη), the (so called) arts of the Muses, particularly music in the modern sense of the word, and poetry and eloquence. Plato contradistinguishes it from *gymnastics*. The ἀγωνες μουσικοι (musical contests) took place in all the above arts. At a later period, the words *music* and *musical* were restricted to that art alone which strives to affect the soul by tones. We shall form a more just idea of this art if we search for its origin in our nature. We see it, as it were, daily originating, or, at least, we daily perceive in common life the germs from which it grew up. Nature seems to have established an intimate connexion between the emotions and the sense of hearing. Of the two nobler senses, sight and hearing, the first seems to belong more particularly to the understanding; we owe to the eye, and to abstractions from the images which it presents, most of our general notions and ideas, while the ear appears to be more intimately connected with the feelings. Feeling expresses itself most readily in tones. Fear, joy, desire, anger, have each a peculiar tone, understood by all human beings. Man soon perceives this, and often prolongs these tones, in order to continue or heighten a certain feeling or excitement; hence the repetition of the war-cry, in the combats of rude tribes, or of the tones of mirth at their festivities. The love of excitement, moreover, soon leads to the production of these tones, even on occasions when the feeling from which they first originated does not exist: thus we find the natural tones of joy repeated, in order to effect that of which they were originally the effect,—a pleasant feeling, a contented state of the soul. This, it is true, is not yet music or song, but the first germ of it. Another element of music, springing from a feeling deeply planted in the human heart, and perceptible in children and savages, as well as in the most refined and accomplished, soon associates itself with tones; we mean rhythm. Whatever may be its origin, whether it was first used to relieve the fatigue of a march, or to give connexion to a series of tones, or to enable numbers to join in the utterance of the same tones, or whether it is to be referred mainly to the spirit of classification and love of order, which is so universally operative,—certain it is that the love of rhythm is one of the most general principles of the human soul: it pervades all tribes, all ages, all classes. It alleviates labour, and cheers the heart. A simple division of tones soon gave rise to a more artificial one, and man soon perceived that he might utter two short tones, and make two short steps, in the same time as one long tone or one long step. Man does this long before he reflects on it: witness the regular strokes of the smith's hammer, or the thresher's flail, and the dances of the rudest nations: thus we have the two essential elements of song—tones and rhythm. As precise divisions in sciences or arts, or any of the departments of human action, grow up slowly, and kindred branches are at first usually mingled, it is highly probable that dancing and music—two arts founded on measured time—were at first intimately connected, as we find still to be the case among most, perhaps all, tribes, in a state of infancy. By degrees, the song was separated from the dance, and instruments which originally only served to accompany the song, became also the object of a separate art. Tones by themselves, apart from dance or words, were cultivated; the laws according to which they must be connected, so as best to express the language of feeling, were more and more investigated, the application of these laws further and further extended, until music was developed to that degree of perfection which we admire in the works of the greatest masters. Every musical production, to deserve the name, must be expressive of feelings, and, through them, of ideas; but though music exists wherever the human species is found, it does not follow that every good piece of music must please all men alike, or be understood by all alike, because music is an art requiring cultivation of the mind and heart, to appreciate it fully; still, however, music, even of the most elevated kind, retains so much of its character of universality, that the productions of the greatest masters delight much more generally than the best performances in other arts. Witness, for instance, certain tunes of Mozart, or other great composers, which are repeated on all occasions, so that they not unfrequently become tedious from this cause. The Hunter's Chorus in the Freischutz may be heard throughout Europe and America. The reason is, that music addresses the feelings, and feeling is alike all over the world. In this point of universality, music and mathematics (incongruous as the association may seem) agree, the relations of numbers and magnitudes, with which mathematics has to deal, being everywhere the same, and the simple feelings of the heart which music addresses being common to every region. Insensibility to music may generally be referred to a defective organization in the sense of hearing; but the whole conformation of some men is probably much better fitted than that of others to enable them to receive pleasure from it. In this respect, too, music and mathematics seem to have a resemblance, that great excellence in either seems to require a marked peculiarity in the nature of the individual. The effects of music are sometimes said to be merely sensual. It is addressed to the ear, indeed; but all the influences which we receive from without are conveyed through the medium of the senses, and the tones of music often speak a language to the soul richer in meaning than any words. It will hardly be pretended that feelings which cannot be expressed in words, are necessarily of a lower character than those which may be so expressed. The most elevated feelings are beyond the power of even metaphorical language. Nothing is merely sensual which makes a lasting spiritual impression upon the soul; and he who denies to music such a power, has not heard its sublimest strains, or has not the capacity to appreciate them. In music, we have to distinguish the invention called *composition* and the *execution*. As to the latter, it may be vocal or instrumental; and as to the purposes for which music is intended, we have *church* or *sacred* music, *theatrical* music, *concert*, *dancing*, &c., music. Music, considered on its technical side, rests on mathematics and acoustics. Since Euler, it has been understood that music ought to be treated under a mathematical point of view. It operates, in space and time, in such a way as to be susceptible of mathematical measurement. Tones, considered simply as to their duration, are magnitudes of time, which stand in a descending geometrical progression, the exponent of which is 2: 1, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, $\frac{1}{32}$, &c. The time is expressible in fractions ($\frac{1}{4}$, $\frac{3}{4}$, $\frac{2}{4}$, $\frac{6}{4}$, $\frac{3}{8}$ time), which indicates in numbers how many parts of the unit of time (𝅝) are contained in each bar. In space, tones can be considered as magnitudes of sound, and their distances from each other in the scale are expressed in numbers, which have reference to a mathematical division of the space between two sounds, adopted as limits (the octave, the third, seventh, &c.) Similar proportions exist between the various voices, the treble, bass, &c., and between the various keys. In instrumental music, the depth and height of the tones depend upon the proportions of the thickness, length, and lightness of the chords, the quality, diameter, and distance of the openings in wind instruments, and the like; and all these proportions can be determined and measured according to mathematical rules. This regularity may perhaps afford the reason why the effects of music are so general, and its influence on the nerves so powerful. The same circumstance renders it incapable of expressing those fine shades of feeling which can be communicated only by the aid of reflection.

When by any means the air surrounding the organ of hearing is put into an undulatory or waving motion, the drum vibrates, and these vibrations are, by the beautifully contrived apparatus of the internal ear, conveyed to the auditory nerve, and passing to the brain, occasion the sensation of sound. These undulations in the air will be followed by a perception of sound, if they affect the drum of the ear, provided they be not fewer than thirty-two, or more numerous than 8192 in the second of time: and the distinguished characteristic of musical sound is, that the vibrations which produce it are repeated at equal intervals, that is, with the same rapidity for a sensible time; a circumstance which is expressed by saying, that the sound keeps at the same pitch. Pitch and strength are very different qualities of sound. The pitch of a boy's voice is much higher than that of a man's, or the pitch of a table bell than a church bell; but the strength of each of the latter generally exceeds that of the former. The pitch of a sound depends upon the number of vibrations that the sounding body makes in a given time, the pitch being the higher, the more numerous these vibrations are. The strength of a sound, on the other hand, depends on the largeness of the waves of air. The string of a violin when touched with the bow will vibrate, and if its length or tension be not altered, its vibrations will all be at equal intervals from each other, and the sound produced, remaining at the same pitch for a sensible time, is musical. But if, whilst the string is acted upon by the bow, the finger by sliding gradually, shortens the string, the pitch of the sound will alter continually, and the sound is no longer musical. The sounds of the voice in speaking are, therefore, not musical, for although a whole sentence be pronounced in what is called a monotone, still every syllable is inflected in some degree, so that the pitch of the voice in pronouncing the word *and*, is in no case the same, at the beginning, middle, and end. If the voice remain at the same pitch during the enunciation of a single syllable, that syllable is not spoken, but sung. The most simple and convenient measure of the pitch of a sound, is a string stretched over two supports, as the string of a piano forte. The string on being struck will vibrate and produce sound, and the number of its vibrations in a given time may be regulated by three circumstances. The heavier a given portion of the string is, the less tensely it is stretched, and the greater the distance between the supports, the fewer will be the number of vibrations in a given time, and *vice versa*. For the sake of simplicity we will suppose that the weight of the string is unaltered, and that its tension remains unchanged, but that the distance between the supports can be increased or diminished at pleasure. Let the string be struck, and let the tone produced be called the *key note*, and let the length of the string, that is, the distance between the supports or bridges on which it is stretched, be measured Let, now, one of the supports be moved, so that the length of the string shall only be one half of what it was before, and the string being made to sound, the tone produced will be higher in pitch than the key note, and will have that relation to it which musicians call an octave. With the exception of the relation of union or tones of the same pitch, no two tones could bear any more simple relation to each other than that of the key note and its octave. It is, in fact, established by nature, for when the two tones are sounded together, they almost entirely unite, and they form the limits of the musical scale. Between the key note and its octave there is a natural gradation by intervals in the pitch of tone, more agreeable than any other, the octave, as its name implies, being the eighth, the whole forming a complete scale of music, called the natural scale. The octave of the key note may be the key note of a similar scale, which will be a repetition of the first, but higher in pitch: and the two scales, if sung together, will, to an unpractised ear, appear to be identically the same. The relation of the intervals, or differences of pitch in the several tones of the natural scale, forms the fundamental part of the study of music. Their value may be determined correctly by taking the length of the strings by which they are produced. If the length of the string which produces the key note be 32 inches, the length of the strings to produce the tones in the entire scale will be

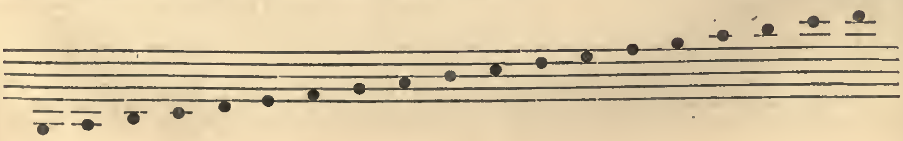
32, 30, 27, 24, 21, 20, 18, 16.

The arrangement of the tones of the scale in succession, so as to give pleasure to the hearer, forms that department of music called Melody; but if the sounds are combined, so that more than one shall be heard at once, the arrangement comes under the denomination of Harmony.

In order to represent to the eye the different pitch of the musical tones, five parallel lines are employed, called a staff or stave, and the degree of pitch is shown by certain characters placed upon these lines, or on the spaces between them, the character having a higher place on the stave which represents the tone having a higher pitch



These characters are called notes, and are of different forms; this, ♩ however, is the only one which we shall employ in the mean time, for the purpose of marking the degree of pitch of the tones. It will be seen in the stave represented above, that we have placed a note on the space below the first line, and another on the space above the fifth, and a note on each space and line intervening, so that by this arrangement we are enabled to represent the pitches of eleven notes, being one entire octave and part of another. But as one tune often comprehends tones which differ from each other in pitch even more than two octaves, an additional expedient is employed, viz. lines called ledger or added lines, placed both below and above the stave, so that we may represent tones differing in pitch to the extent of three octaves, thus:

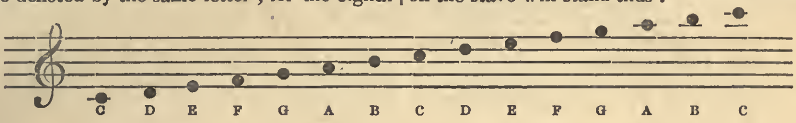


The simple scale is usually called the Diatonic, to distinguish it from other scales, in which the octave is divided into different elements. The intervals of this scale are not all equal, but are some of them nearly the double of others, the larger intervals being called full, and the smaller semi, or half tones. We say that the full tones are *nearly* double of the semi tones, but as in common musical instruments furnished with keys, the full tones are just double of the semi tones, and, as it will be conducive to simplicity, it will be best, in the mean time, to consider the interval of a full tone as *exactly* double of that of a semi tone. The notes in the octave are denoted by the first seven letters of the alphabet being employed; therefore, if C be the letter denoting the key note of the scale, we will have, C, D, E, F, G, A, B, C, representing the whole octave. The first and last notes are denoted by the same letter; for the eighth note in the scale may be regarded as the key note of a second scale, entirely similar to the first.

From the key note to the first tone above it, there is the interval of a full tone; from the second to the third is also a full tone; but from the third to the fourth there is only the interval of a semi tone. From the fourth to the fifth, from the fifth to the sixth, and from the sixth to the seventh, the intervals are all full tones; but from the seventh to the eighth the interval is a semi tone. There are thus five full tones, and two semi tones in the scale, and employing the letters before alluded to, we may represent the scale thus,

1 1 ½ 1 1 1 ½
C, D, EF, G, A, BC,

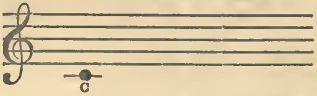
in which the spaces between the letters are small where the semi tones occur. The scale represented on the stave will stand thus:



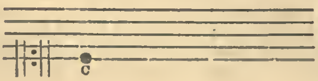
The character placed at the beginning of the stave denotes the letter G, and is placed there to show that the tone which G represents is on the second line. The note C on the ledger line below the stave is that of the middle C on the key board of the piano forte, and mathematicians have found, that to produce this note at concert pitch, there will be required 240 vibrations in the second of time. And thus the absolute pitch of this note having been determined, the pitch of all the rest is also established. To avoid the inconvenience of many ledger tones, other clefs are employed, in order to represent the pitches of notes lower than those denoted by the clef we have been considering. Let six lines be drawn below the stave on which the G clef is placed. The nature and use of these clefs will be easily understood by what follows. The tenor clef stands on the line occupied by the note middle C, the treble clef on the third line above this, and the bass clef on the third line below; and thus the pitch of each of the clefs is determined. The treble or G clef is always set upon the second, and the bass or F clef upon the fourth line of the stave. But the position of the tenor or C clef is variable, as it may be placed upon any of the lines except the fifth. This variation in the place of the C clef, however, cannot be the source of any misunderstanding as to the pitch of the notes on the stave to which it is attached, if it be borne in mind that all the lines above it belong to the treble, and all below it to the bass clef. It is denominated tenor, when on the third counter tenor. In the music of the Italian and German masters, we find the C clef placed upon the first line, the clef is then denominated soprano, and the music suits treble voices.

The various clefs are shown below on their staves, and the place of the middle C of the piano forte shown in all the staves, from which it will be easy to determine the value of the notes on each.

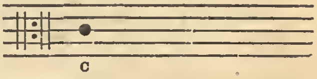
TREBLE.



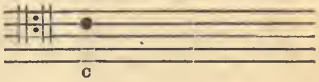
SOPRANO



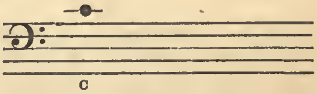
COUNTER TENOR.



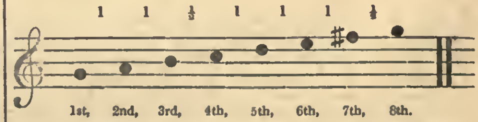
TENOR.



BASS.



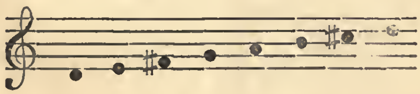
The range of a piece of music will not, however, be always such, that its key note shall be C, and at the same time come within the limits of the instrument or voice by which it is required to be performed. For instance, a melody written on the scale of C might even have some of the notes as low as G beneath the stave, in which case it would be impossible to perform it on the common German flute, which produces no note lower than D. Now, betwixt the lowest note of the melody and the lowest note which the flute can produce, there is the interval of a fifth; it will therefore be necessary to raise the air five notes before it can be brought within the compass of this instrument. If the melody be raised five notes, the key note will be no longer C but G, and we now proceed to examine how the same relation of intervals can be preserved as in the scale of D, which has been already explained. Taking then the key note G, we have



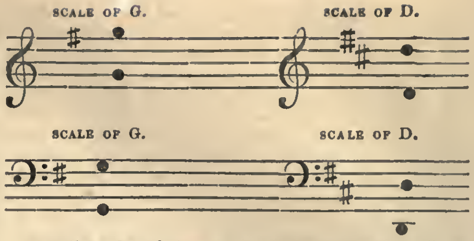
The characteristic feature of the diatonic scale is, that the intervals between the third and fourth, seventh and eighth, are semi tones, and all the rest full tones. Accordingly, in the above scale the interval from G to A ought to be one full tone, and it is so in the natural scale. The interval from A to B ought likewise to be one full tone, and it is so in the natural scale. From B to C, or from the third to the fourth, ought to be one half tone, and the interval between B and C is so in the natural scale. So likewise the intervals from the fourth to the fifth, and from the fifth to the sixth, ought all to be full tones, and the intervals from C to D, and from D to E, are full tones in the scale of C. But the interval between the sixth and seventh ought in this scale to be one full tone, whereas in the natural scale, that from E to F is only half a tone; in consequence of which the note F must be raised half a tone higher than it is in the scale of C, a circumstance which is denoted by the mark ♯ denominated a sharp, and which serves to show that the note before which it is placed ought to be played half a note higher than it would otherwise be. By the introduction of this sharp, then, the note F is raised half a tone higher than in the natural scale, and the interval from E to F is made a full tone: at the same time this sharpening of the note F has brought it in pitch only half a tone lower than the eighth note G of the scale, thus making the interval from the seventh to the eighth only half a tone, which the natural scale requires.

We have thus found that by the introduction of one sharp the whole melody may be transposed from the key of C to that of G.

If a piece of music set on the scale C did not suit the pitch of the instrument, and it is found necessary to make the key note D, we proceed to form the scale in a similar way to the foregoing. And the scale of D will stand thus:



For the sake of simplicity, however, the sharp is placed at the beginning of the stave, immediately after the clef, and on that line or space on which the notes to be sharpened throughout the piece occur thus:



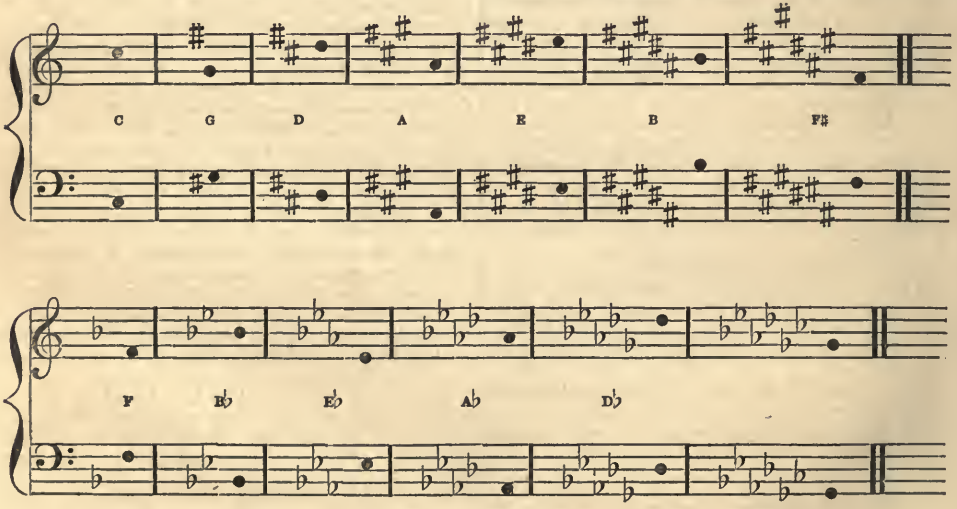
SCALE OF G. SCALE OF D.

SCALE OF G. SCALE OF D.

It will be found that in some instances it will be necessary to lower the pitch of a note by half a tone, which is denoted by prefixing the character ♭ called a flat, after the same manner as the sharp was employed, but with the contrary effect. This will be illustrated in the formation of the scale whose key note is F. The first two intervals from F to G, and from G to A, are full tones at the natural pitch of the notes. The third interval from A to B is a full tone in the scale of C, but the diatonic scale requires that the third interval should be a semi tone, and we must therefore reduce the pitch of B a semi tone, by prefixing the flat ♭. The interval from B to C is naturally half a tone, but the B being flattened, it has in this case become a full tone. The rest of the scale requires no alteration.

Since there are five full and two semi tones in the natural scale, there must therefore be in all twelve semitones in the octave, and this is the number of keys which constitute an entire octave in the piano forte. Now, reckoning from C, and denoting a sharp by s, and a flat by f, we have the keys C, Cs or Df, D, Ds or Ef, E, F, Fs or Gf, G, Gs or Af, A, As or Bf, B, C, each of which may be made the key note of a scale.

From this synopsis it will be easy to express any of the scales on the various clefs, but we will here confine ourselves to the treble and bass, being those which most commonly occur.



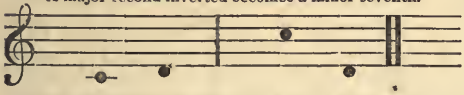
Much information may be derived from the foregoing example, and the reader is desired to give it a careful examination. It will be observed, that the scales go on gradually, from the natural scale of C, increasing in the number of sharps, to the scale of F sharp; after which the flats are introduced in a similar manner. The scales are separated from each other by upright lines, called bars, which are here used precisely in the same way as the comma in ordinary letter-press, and the double bar at the end may be regarded as a period. The treble and bass staves are connected together by a brace, and each scale in the treble clef has its corresponding scale immediately beneath it in the bass.

Before proceeding farther with our examination of the preceding example, it will be necessary to ac quaint the reader with some expressions which musicians employ. From any note to the next nearest it in the scale, the interval is said to be a second. From any note to the second from it in the scale, the interval is said to be a third; and, in fact, in reckoning any interval, the two notes mentioned, together with all the notes that may lie between them in the scale, are counted thus in the natural scale of C, reckoning from the key note, we have the intervals as below.

2d 3d 4th 5th 6th 7th 8th
C D E F G A B C

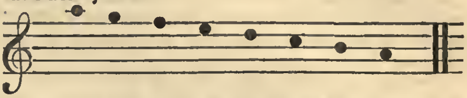
It must be evident from what has been said before, that these intervals will be of different kinds. Thus the interval from C to D is greater than that from E to F; the former being a full, and the latter a semi tone; they are both, however, intervals of a second, and to distinguish them from each other, the one is called a major, i. e. *greater* second, and the other a minor, i. e. *less*. In like manner the interval from C to E is said to be a major third, because it contains two full tones, but the interval from D to F, although a third, is said to be a minor, because it contains only one full tone and a semi tone, and so of all the other intervals. To invert an interval is to place the lower tone an octave higher, so that it becomes the more acute of the two, or *vice versa*. Thus the interval from C to D is a major second, but if we invert it by making the C an octave higher, the interval becomes a minor seventh.

A major second inverted becomes a minor seventh.



It is plain that any interval and its inversion complete the octave, and hence they are called complements of each other.

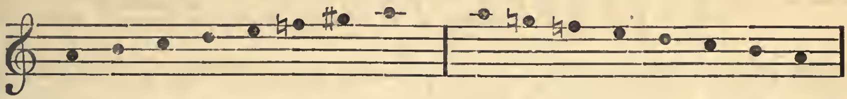
If we take the note A of the natural scale C, and all the notes of that scale until we complete an octave, that is, until we go up to the next A, we will form a scale bearing a very different character from that previously considered. If this scale be performed descending, we will find, when the octave is completed, that the succession of tones is not only agreeable, but that we have come to a satisfactory close.



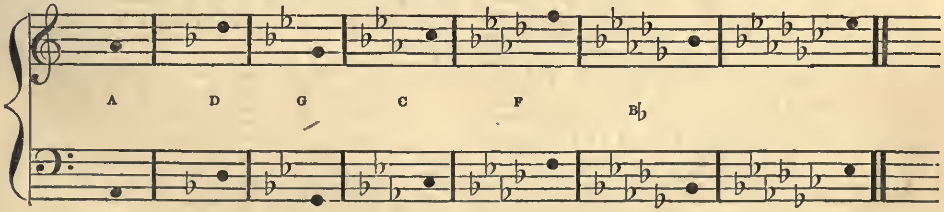
On comparing the descent through the fifth from E to A, with the descent through the fifth from G to C, we will at once perceive a marked difference in the character of the two strains; the former being plaintive and wailing, the latter cheerful and bold. This difference of character arises not from the difference of pitch of the two strains, but from the difference of relation among the intervals of which they are composed. On examining the last thirds of these strains we find the cause of this difference, for the interval from C to A (in the scale of A) is a minor third, being composed of one tone and a semi tone, while that from E to C (in the scale of C) is a major third, being composed of two full tones; the scale of C is, therefore, said to be major, and the scale of A (as above considered) minor.

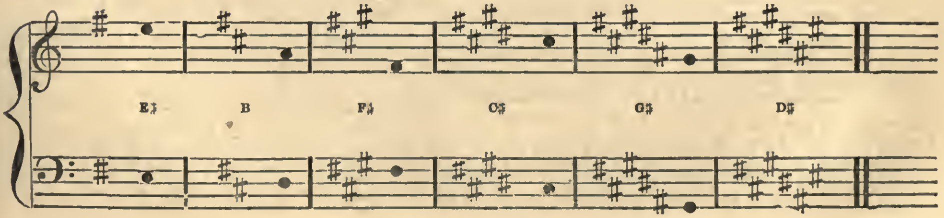
We have said that it is to the thirds principally, that we are to attribute the difference of the character of these two scales; but the minor sixth A F has also a considerable effect.

In ascending through the scale of A, we find that we are obliged to sharpen the seventh note G, so that the succession of tones may be agreeable, and in so doing we find that the interval from F to G becomes different from any of the other intervals of the diatonic scale, and we are obliged to sharpen the F also, so that the ear may be satisfied; wherefore we find that the minor scale is usually written in a different manner, ascending and descending. Thus, if the mark ♮ called a natural, denotes that the note before which it is placed is to be performed at the same pitch as in the natural scale.



Where any piece of music is written on the natural scale of A minor, we have no flats or sharps at the beginning of the stave; but employing similar principles to those that guided us in the construction of the various major scales, we may in like manner form a system of minor scales to the various key notes as below:





It is desirable that the musician should have some easy mode of determining the number and situation of the flats and sharps of every key, both in the major and minor modes, and those given in the foregoing chapter for the major scales being sufficiently simple, we will here proceed to show such a relation between these and the minor scales as will enable the student easily to determine the one from the other.

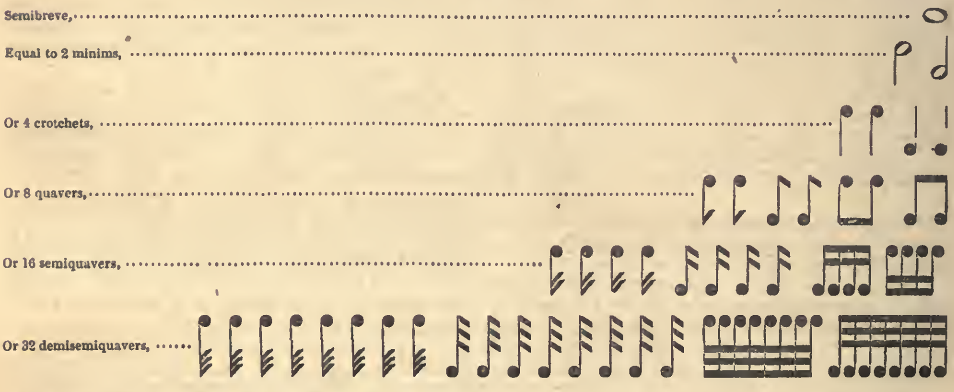
Writers on music designate the flats or sharps placed at the beginning of the clef—signatures. On comparing the minor and major keys together, we will find that the signature of

C major is the same as	A minor
F ……………………	D ……
B♭ ……………………	G ……
E♭ ……………………	C ……
A♭ ……………………	F ……
D♭ ……………………	B♭ ……
G♭ ……………………	E♭ ……
G ……………………	E ……
D ……………………	B ……
A ……………………	F♯ ……
E major is the same as	C♯ ……
B ……………………	G♯ ……
F♯ ……………………	D♯ ……

These are called relatives of each other, that is, A is the relative minor of C major, B minor is the relative of D major, &c., and having any major scale, it is not difficult to find the minor.

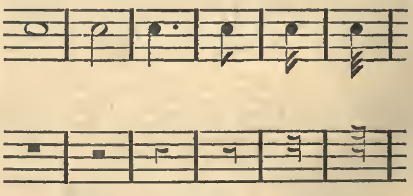
It remains for us to notice another scale, differing from those already considered, and called the Chromatic, i. e. *coloured* scaled, as it is employed by the musician to give effect to his piece, much in the same way that colour is employed by the painter. The chromatic scale proceeds by semi tones from the key note to the octave. Many new intervals arise out of this scale, which it would be out of place here to examine. For a complete development of the scales see our article *Enharmonic.*

We have stated before, that notes, by their place upon the clef, show the degree of acuteness or gravity of the tones which they represent; but besides this, they have various forms in order to show what length of time is to be occupied in performing them. The scheme below will show at one view the relative values of these notes in respect to time.



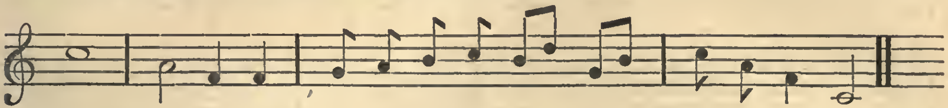
In church music we sometimes meet with a note double of the length of the semibreve, viz. the breve, marked thus □, and in some modern pieces of music which are very slow, we meet with a note 𝅘𝅥𝅱 only half the length of the demisemiquaver; but, if the semibreve be taken as the unit of measure, the minim will be one-half, the crotchet one-fourth, the quaver one-eighth, the semiquaver one sixteenth, and the demisemiquaver one-thirty second. These differences in the length of notes, however minute they may appear, are insufficient for the purposes of music: accordingly, a dot is used, which being put after a note, makes it one-half longer than it would otherwise be. Thus, 𝅗𝅥 · is equal to 𝅗𝅥 ♩ or to ♩ ♩ ♩ also ♩ · is equal to ♩ ♪ or to ♪ ♪ ♪ and so of the rest. Some composers employ a tie ⌢ for the dot: thus 𝅗𝅥⁀♩ is the same as 𝅗𝅥 · and ♩♪ the same as ♩ · When the tie is employed for this purpose, the notes are always at the same pitch. In modern music a double dot frequently occurs, and in this case the note is always to be sounded as long as itself, and the next two succeeding notes in the table given above: thus 𝅗𝅥 · · is equal to 𝅗𝅥 ♩ ♪ and ♩ · · is the same as ♩ ♪ 𝅘𝅥𝅯 wherefore, by the use of the dot ♩ · 𝅘𝅥𝅯 is the same as · ♩ and ♩ ·· 𝅘𝅥𝅰 as ♩ ♩ ♪ 𝅘𝅥𝅯 Sometimes three notes are to be performed in the time of two, which is marked by placing the figure 3 and a tie above them; thus $\overset{\frown}{8}$ ♪♪♪ is the same as ♪♩: notes so written are called triplets. Two triplets are sometimes joined together by one tie, and a figure 6, designating that they are to be performed in the time of four.

Sensible intervals of time often occur between the sounding of two notes, which is denoted by characters called rests, each note having a corresponding rest, thus



A dot placed after a rest makes it half as long again as it would otherwise be; thus 𝄾 · is the same as 𝄾𝄿

Regular music naturally arranges itself into measures, by the occurrence of emphases, at equal intervals of time, the divisions thus arising being denoted by perpendicular lines, *bars.* The time of perform ing one measure must be precisely the same as that employed in performing the preceding one of the same melody, but the notes may be different in value individually, while as a whole they are the same. Thus :



Here the measures are composed of notes of different duration, but the amount of the lengths of all the notes in one measure is the same as the amount of those of all the notes of any other ; one semibreve being equal to a minim and two crotchets, or eight quavers, or two quavers a crotchet and a minim. The semibreve may be taken as the unit of measure, and the subdivisions are formed by continual bisection, i. e. dividing by two, or trisection, i. e. dividing by three, the former being called common, and the latter triple time. Of both of these kinds of time, there are various species, distinguished from each other by the recurrence of accents. The first subdivision of common time is that of two minims in the bar, denoted by placing a large C immediately after the signatures at the beginning of the piece, as may be seen in the example below (A). The next subdivision is that wherein two crotchets constitute a measure, which is signified by prefixing the fraction $\frac{2}{4}$ in the same way as was directed for the C (see B). Here the under figure denotes into how many parts the semibreve is divided, and the upper figure how many of these constitute one measure.

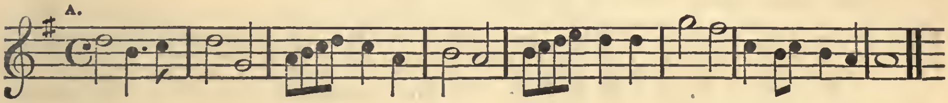
Four-crotchet time is accented on the first and third, and unaccented on the second and fourth. It has, therefore, a kind of close at the half of the measure, as well as at the end, in consequence of which it is not unfrequently called compound common time. It differs, however, from $\frac{2}{4}$ time only in the omission of each alternate bar, and is designated by a C, with a bar drawn through it, placed after the signatures at the beginning of the clef (see C in the example below), and it may be observed, concerning this measure, that it is commonly understood to be quicker than the other species of common time. In the following examples, from Haydn's Symphonies, it will be easy to follow the time. In the last bar of each of the examples B and C, the duration of the notes will not complete the measure, and a rest is therefore introduced, which fills up the time. In the last measure of example C, we find a mark *tr*, signifying that the note over which it is placed is to be shaken, and the two small notes immediately following are to be played quickly, and whatever time they occupy is to be taken off the succeeding note.

In triple time, the measure is divided into three equal parts, the first being accented, and the second unaccented, but the third, according to Colcot, is somewhat accented when compared with the second. This time is either of three minims, or three crotchets, or three quavers, which are expressed by fractions of the semibreve ; the under number showing how many parts the semibreve is divided into, and the upper, how many of these parts complete a measure.

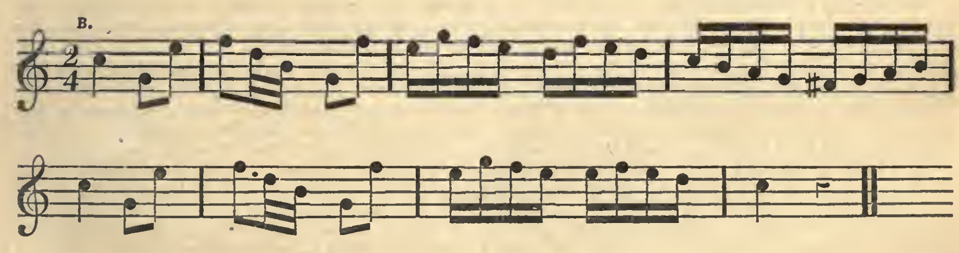
These are the principal kinds of triple measure, but compound triple measure is often formed by leaving out each alternate bar, and thus we have, $\frac{3}{2}$, $\frac{3}{4}$, $\frac{3}{8}$, or the subdivisions, $\frac{6}{2}$, $\frac{6}{4}$, $\frac{9}{8}$, $\frac{6}{8}$, or $\frac{12}{8}$, &c

EXAMPLES OF COMMON TIME.

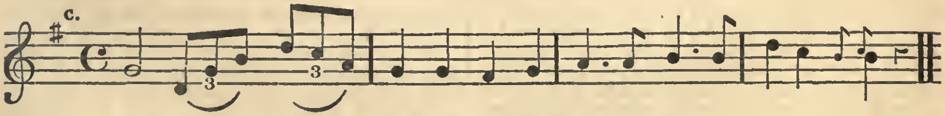
A.



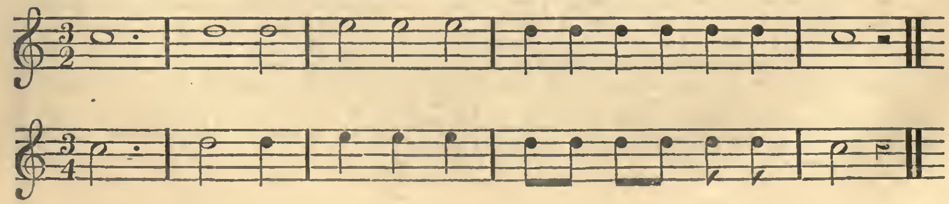
B.

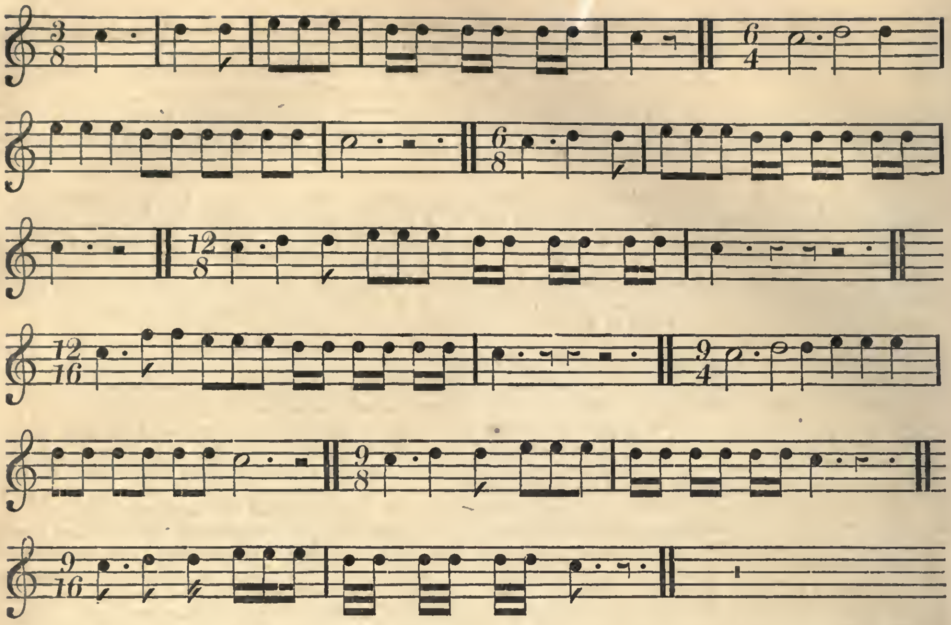


C.



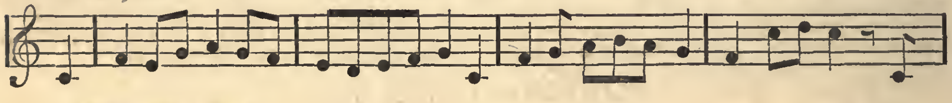
EXAMPLES OF TRIPLE TIME.



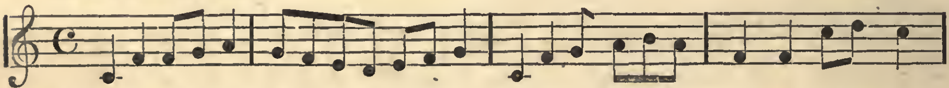


The effect of a piece of music may be varied by changing the position of the bars; this, in the case of the 'Corn Riggs,' is very happily illustrated by Dr Colcot:

Original Melody.



The same differently barred.



Melody is of two kinds, air and recitative. For the purpose of air it is necessary that the succession of sounds should be disposed into regular cadences, which is called rhythm; the notes of the piece must all belong to one key, or at least, to some other key which bears a particular relation to the principal key; and like every other piece of musical composition, air must have subject. An air must be divided into measures of equal time, of some one or other of the species described in the foregoing chapter; and several of these measures must be grouped together, which groups being distinguished by cadences; these parcels of measures forming, as it were, so many phrases, perfectly analogous to verses in poetry. A foot in music is the quantity of one measure, and if the air were always to begin at the beginning of a measure, the feet would always be enclosed by the bars, in which case there would not be any occasion to make a distinction between a foot and a measure.

Since a foot is the same length as a measure, it follows, that as there are a variety of measures, there will be a corresponding variety of feet. Two or more feet constitute a verse, and hence it will be evident that there will be greater diversity in verses, than in feet. Two or more verses constitute a strain or stanza: the former comprehending the first and second parts of our common national melodies, or pieces formed after that model; while the latter designates those phrases or pieces marked by cadences in the longer pieces of music, such as sonatas, concertos, symphonies, &c., which, however, are not marked by double bars.

The analogy between the prosody of language, and that of music, is so strong, that the terms used in the former may with advantage be employed in the latter; therefore in the one as in the other:

Verses of two feet are called dimeters,
............three ....trimeters,
............four.....................tetrameters,
............five.......................pentameters,
............six ....:..........hexameters,

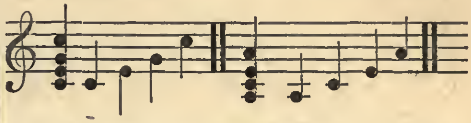
In an air there must be a principal key, which is frequently maintained throughout the whole piece, on which the tune must begin and end, and, in the course of the piece, the principal tones must bear such a relation to the key-note as to produce an agreeable effect; this is called Modulation.

We before adverted to *subject*, being a constituent of an air. Subject consists in the recurrences of the same or like phrases or turns throughout the melody; and it is subject which distinguishes the air, or indeed which gives it existence, as it shows design in the composer. In the larger pieces of music, such as sonatas, concertos, symphonies, &c., many subjects occur throughout the piece, differing more or less from each other in character, nevertheless they must all tend to bring out the general character or subject of the composition.

Sounds which differ in pitch when heard at the same time, produce an effect which is either agreeable or the contrary. When two or more sounds, heard at the same time, produce an agreeable effect, such a combination is called a chord; but if the effect be disagreeable, such combination of sounds is called a discord. A succession of chords in proper order, interspersed here and there with discords, according to certain fixed laws, constitute harmony. Any note and its unison, octave, fifth major, fifth minor, third major, third minor, sixth major, or sixth minor, will form a chord; to which list some are disposed to add the minor fourth. The following scale will show the exact quantity of the intervals used in harmony, by the numbers they contain of tones major, tones minor, and semitones, which we shall denote by T, t, S.

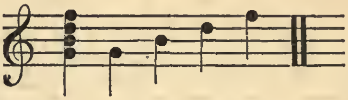
The octave contains	3 T, 2 t, 2 S
The minor second	1 S
The major seventh	3 T, 2 t, 1 S
Grave major second	1 t,
Acute minor seventh	3 T, 1 t, 2 S
Major second	1 T,
Minor seventh	2 T, 2 t, 2 S
Diminished third	2 S
Redundant Sixth	3 T, 2 t,
Redundant Second	from 1 T, and 1 t, take 1 S
Diminished seventh	2 T, 1 t, 3 S
Grave minor third	1 t, 1 S
Acute major sixth	3 T, 1 t, 1 S
Minor third	1 T, 1 S
Major sixth	2 T, 2 t, 1 S
Major third	1 T, 1 t,
Minor sixth	2 T, 1 t, 2 S
Diminished fourth	1 T, 2 S
Redundant fifth	2 T, 2 t,
Minor or perfect fourth	1 T, 1 t, 1 S
Major or perfect fifth	2 T, 1 t, 1 S
Major fourth	2 T, 1 t
Minor fifth	1 T, 1 t, 2 S

Among chords there are different degrees of agreeableness. The unison is the most perfect relation that can subsist between two sounds, and next to this is the octave. In point of perfection, next follows the major fifth; so named in contradistinction to the minor fifth, which is called imperfect. There are several technical terms employed to distinguish the tones of a piece, which it may be necessary for us here to explain, although it is our wish as much as possible to avoid the introduction of them into our pages. The *tonic*, or key note of a melody, is that tone which predominates throughout, and on which either the air itself or its bass must terminate. The dominant is a perfect fifth above the key note, and receives this name, as it is understood in some measure to govern the key note. The fifth below, or what is the same thing, the fourth above the key note, is called, for a similar reason, the subdominant. The leading note, or sharp seventh, is always a major third above the dominant; and therefore, when it occurs in the minor mode, it must be preceded by an accidental sharp, or natural. The mediant is either a major or minor third to the tonic, and the submediant is a major or minor sixth, according as the mode may be major or minor. The supertonic is the second above the key note. When any tone and its third major, or minor, together with its perfect fifth, are sounded together, the combination is called a common chord, and to this combination the octave may be added, making perfect harmony, and the name of the chord and its perfection remain unaltered, provided there be no alteration in the key note. Thus we have the chords of C major and A minor. It will be observed that the tones which constitute these chords are also agreeable in succession.



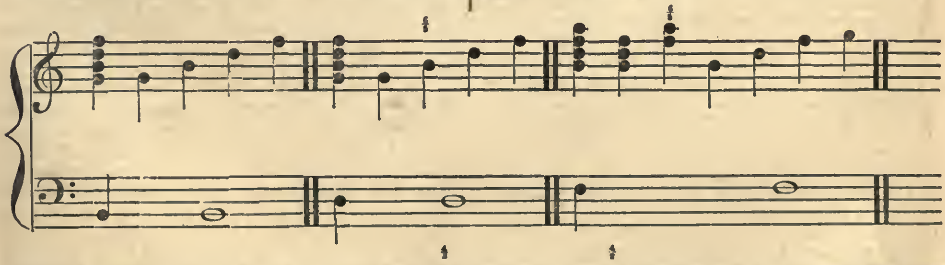
If the lowest note in the chord of C be made E, the chord then becomes what musicians call a sixth, as the key note is a sixth above it; and in like manner, had the lowest note of the chord of C been G, the chord would have been called a fourth. These two last mentioned chords are inversions of the common chord, and they have all the same fundamental note or tonic, which is called the fundamental bass, being that on which all the others are formed. The common chord is sometimes denoted by figures placed under the notes of the bass, as $\substack{5\\3\\8}$ or $\substack{5\\8\\3}$ or $\substack{8\\3\\5}$. The chord of the sixth is figured 6, and the fourth, $\substack{6\\4}$.

Before proceeding farther on the subject of chords, it will be necessary to make the reader acquainted with the nature of discords. The minor seventh is by far the most simple of discords, and may be expressed thus:



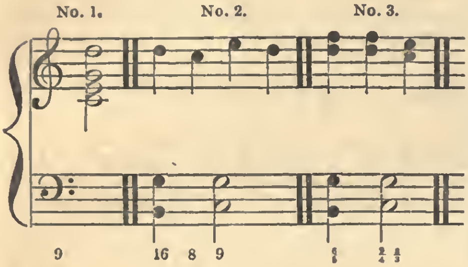
This is in the major scale of C, and the lowest note of this combination is therefore a fifth above the tonic or key note, and wherever this discord is introduced it must be so; from which circumstance it is sometimes called the *dominant* seventh. As in the case of the common chord, the position of the notes may be altered, but if B be made the bass note, i. e. the lowest, the result will be a chord, and not a discord.

Thus we have by inversion the combination consisting of a minor third and imperfect fifth, together with a sixth minor.



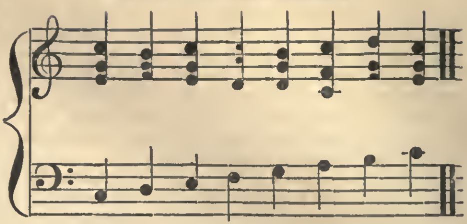
In like manner, D and F may be used as the bass notes in the foregoing combination, and chords will be the result. The three chords being figured, as shown in the examples, are all derived from the seventh, and are frequently denominated a syncopated fifth, third, or second, as the case may be.

The ninth is a discord, which is usually accompanied with the third and fifth. This is expressed in No. 1, and in a composition of four parts, it is expressed as in No. 2; yet, as in No. 3, it is frequently accompanied with a fourth and fifth, but in compositions of three parts the fifth is left out.

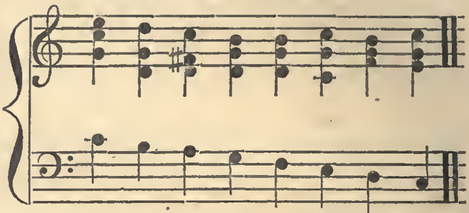


We will here exemplify what is termed the harmony of the scale, or the accompanying tones which produce harmony, with all the notes of an octave.

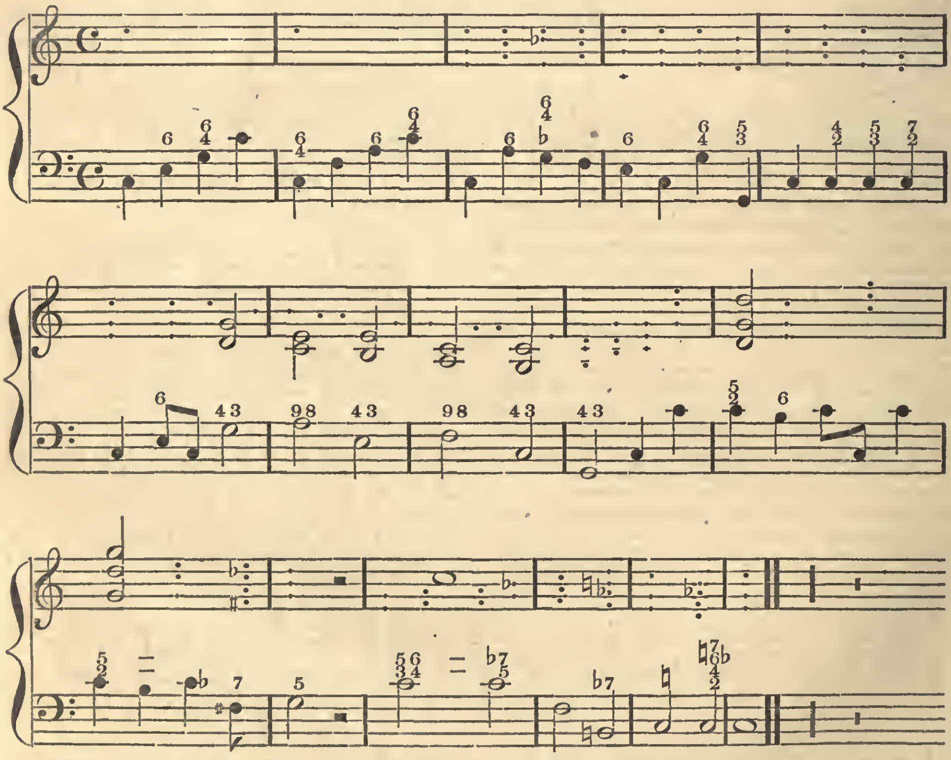
Harmony of the scale, ascending.



Harmony of the scale, descending.



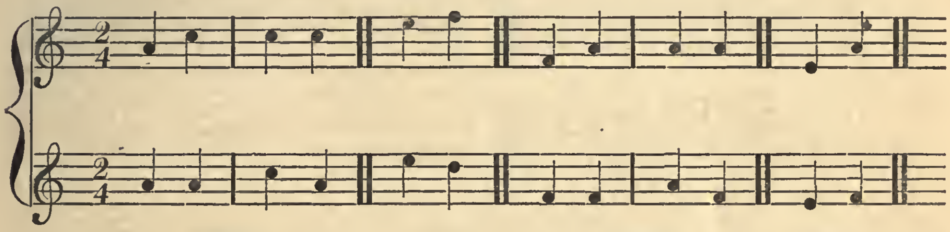
What we have now been considering may be regarded as an elementary view of the first principles of thorough or fundamental bass. The following is a synoptical view of the chords employed in the fundamental bass:



The arrangement and disposition of musical sounds into Airs, Songs, Overtures, Sonatas, &c., is denominated composition. If two parts of a piece, such as the air and bass, both ascend or descend, or remain at the same pitch during one measure, these parts are said to have a similar motion. When one part either ascends or descends while the other remains at the same pitch, the parts are said to go by oblique motion. But the parts are said to go by contrary motion, when one of them ascends while the other descends. The motion is said to be by degrees, when the interval between any tone and that next succeeding it, is not greater than a full tone; but the motion is by skips if the interval be equal to or greater than a third.

In all keys, major and minor, the following notes in the octave take the common chord as their accompaniment, viz., the key note, the fourth, fifth, and octave; but in the minor mode the fifth has a major sixth as its accompaniment; all the other notes require the uncommon chords, the seventh of the minor mode excepted, whose accompaniment is a fifth. Those melodies are the most agreeable which proceed by harmonies, and they require the fundamental bass, and next are those which proceed by small intervals. On the other hand, those melodies are least agreeable which go most by skips, to remedy which the fundamental bass is not used, but other notes are employed, which have thence received the name of supposed basses, being found extremely useful to the composer, since they serve to give variety to the harmony without destroying it, rendering the different parts more equable in their motion, and tending greatly to facilitate the singing of the air. It is usual for every composition to begin with a perfect concord of the key, that is, either octave or fifth, and it must invariably terminate on the key note with the harmony of the common chord; sometimes it may begin or end with a third. When the same note is immediately repeated in the melody, it may be considered as one long note divided into two, and in this case, but in no other, two perfect concords may follow each other; and for the purpose of preventing a repetition of concords, the parts ought to be made as much as possible to move by single degrees and contrary motion, as it is invariably accompanied with a bad effect to pass from one perfect concord to another by similar motion.

In moving from the unison to a third, it is best to take the minor, which may be either by oblique or contrary motion; but if to the major third, it is best to go by oblique rather than similar motion. This we shall illustrate by two parts on the same clef, called the arrangement of first and second, thus:



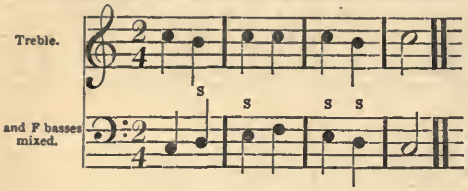
If one part move by a simple degree, motion may be made from a unison to a fifth obliquely, or even contrarily, and from the unison we may also pass to the sixth minor by contrary motion, and to the octave we may pass by oblique motion.

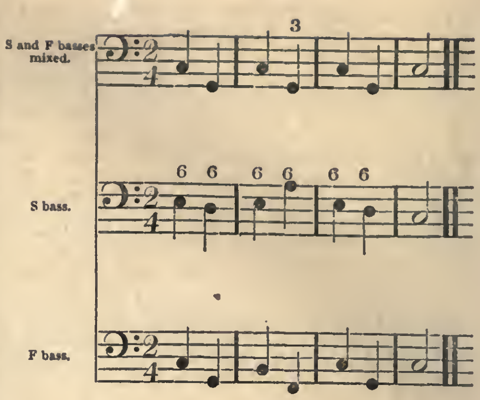
Although thirds are imperfect concords, nevertheless they are agreeable, either ascending or descending, and are therefore frequently employed. In ascending, the third major has a cheerful effect, but the contrary in descending, and the reverse holds of the third minor. When two notes of equal length follow each other, one of which is a discord (called division by supposition), minor thirds may follow each other to any extent: major thirds are not so agreeable. The latter is employed in ascending, and the former in descending, and in moving from a third to any other concord the nearest possible should be taken; and, in parts removed from the bass, replicate thirds, or thirds themselves ought to be employed. In passing from the minor third to the unison the motion ought to be oblique, but from a major third to the unison the motion ought to be similar, and by a single degree. In passing from a third to a fifth by contrary motion, the minor third ought to be preferred; and if one part move a single degree, the motion may be similar. From the major third to the fifth we pass by similar descending motion, but we may pass by oblique motion if one of the parts move by a single degree. We may go by similar or contrary motion from the third major to the sixth minor, or from the third minor to the sixth major, but the motion should be oblique when the thirds and sixths are both major or both minor. In passing from a third to the octave the movement may either be oblique or contrary, this arrangement being most effective when one part moves by a single degree; and it may be added, that when the third is minor the motion ought to be contrary, but should, if possible, be avoided.

From the fifth we may move obliquely to any other chord of the key, but although in point of perfection the fifth is next to the octave, nevertheless it ought not to be much employed except in parts near the bass. To either of the thirds, major or minor, you may move from the fifth by any of the three ways, but the oblique is best. The imperfect fifth may follow the perfect, if the third major immediately succeed in the bass, and the motion be contrary. And from the fifth to the sixth major or minor we ought to move obliquely; but in ascending, it is not allowed to pass from the fifth to the sixth minor. When motion is made from the fifth to the major sixth, and thence to the octave, such motion must be contrary, and motion ought never to be made from the fifth immediately to the octave, nor should a minor sixth ever intervene. From the major sixth we may pass immediately to the octave, but if the sixth be minor we must move to the fifth or to the unison by contrary motion, or to the fifth the motion being oblique; and from the major sixth to the fifth we also pass obliquely, but in this case a third major must follow. Sixths may follow each other by any motion, but it is better that they should be alternately major and minor, the former ascending and the latter descending; and this arrangement is especially useful where the parts move quickly and by single degrees. Motion from the minor sixth to the octave is not allowed.

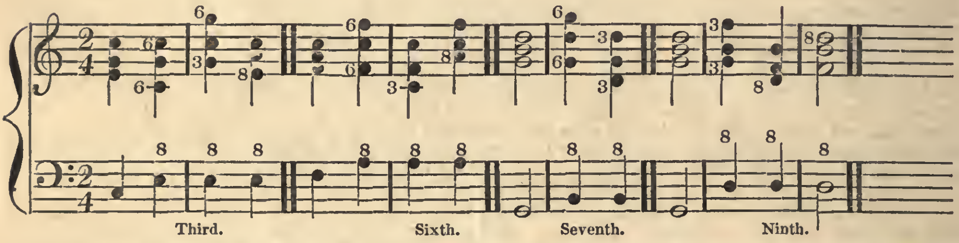
By oblique motion we may proceed from the octave to any concord whatever, with the exception of the minor third; we may pass to it, however, by any other motion; and to the unison we can only pass by oblique motion. If one part move in similar or contrary motion by a single degree, we may pass to the third major from the octave by all the three motions, and to a third minor by contrary motion. By oblique motion we may pass from an octave to a fifth, and even by the other two motions, provided one part move in a single degree. After the octave the sixth major and minor may follow by all the motions, with the exception of the former, which cannot follow by similar motion.

As was observed before, we shall confine ourselves to the consideration of the natural scales C major and A minor, which will serve to illustrate their respective modes—and first of the major scale. The fundamental basses, i. e. the key note, the fifth, and fourth, are the perfect concords of the key, and they are accompanied with their common chords; this is the real or thorough bass, but if the third, sixth, and seventh of the key are used as basses with uncommon chords, i. e. their third, sixth, and octave, such arrangement is denominated a supposed bass. The thirds of the fundamentals are their supposed basses, and may therefore be employed alone. This holds true of all the notes except the fifth of the key, which, besides its third, has also its fifth as a supposed bass. The supposed bass does not alter the harmony of the principle. The following example will illustrate what has been said on fundamental and supposed basses, where F signifies fundamental, and S supposed.





Three methods are adopted in making the accompaniment on the third and sixth of the key note; one by doubling the sixth of the supposed bass, another by doubling the third, and the last by doubling the octave; which three methods are given in the order of their preference. There are only two methods for the seventh and ninth, the one by doubling the sixth, the other by doubling the third. These are exemplified below.



The real and supposed basses which we have been considering are all derived from the perfect concords or common chord, i. e. the third, the fifth, and the octave. These real and supposed basses, however, do not afford all that variety which music requires, which defect is supplied by the bass from the uncommon chord, i. e. the chord formed by the union of the third, sixth, and eighth. This difference of the bass derived from the common chord is supplied by that derived from the uncommon; and the supposed bass is derived much in the same way, with this difference, that the supposed bass derived from the uncommon fundamental, is formed by taking minor thirds above the fundamental, whereas the supposed bass, arises from taking major thirds. The supposed bass thus formed keeps in the natural order of the key.

In the minor key the perfect concords, i. e. the unison fourth, fifth, and octave, require the common chords for an accompaniment; yet, in this scale, the tonic and fourth admit of a minor third; the fifth takes a major third, although in the scale of A it is left minor; wherefore, the third of the fifth of this mode is always sharp.

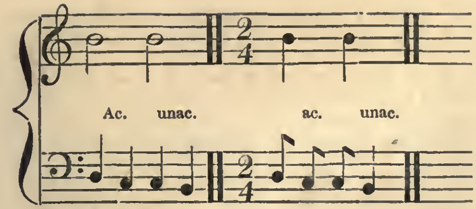
The discords and imperfect concords take as harmony the uncommon chords, but in the key of A the G must be sharpened. The second of the key has a sharp sixth, and the fourth a third, like the tonic; also, with the exception of the key of E, the fifth of the key has a third major, and the seventh a sixth minor.

What we have just been considering is what is commonly denominated plain counterpoint, that is, composition where the harmony is formed by harmonizing each note of the melody by concords. Figurate counterpoint consists in a proper arrangement of concords and discords, and admits of every thing that is capable of adorning a musical composition.

Before the student can enter on this subject, it is of the utmost consequence that he should be acquainted with the nature of the composition and resolution of discords.

A discord in harmony is the lower of two adjoining tones simultaneously sounded; and thus a second, seventh, which are the two natural discords, and the ninth is also regarded as a discord, being a replicate of the seventh, that is, an octave above; or, indeed, any note whatever may be made a discord. From this definition it will appear, that when the unison, i. e. key note, is sounded, with its second above, the unison, being the lower note, is called the discord. Discords may be prepared and resolved either in the treble or in the bass, being regarded as descending from the former to the latter, or ascending from the latter to the former.

A discord is prepared in the unaccented part of the bar by taking a chord, but the note being held on in the accented part of the bar, is sounded with its second, or what is equivalent, the replicate of the second; that is, the ninth,—becoming thus a discord, which is resolved by descending a major semitone or a full tone, and becoming a concord.



The various rules for the composition and resolution may be found in any of the larger works on music; the subject is by far too technical and abstruse for this Encyclopedia.

For the purpose of giving variety in the effect, the notes of a piece are sometimes made to occur on a different key from that on which the melody commenced. These changings of the key obey certain fixed laws which form that department of musical science denominated Modulation. In the construction of a melody keeping in the same key, the principal things to be kept in mind, are, to employ all the notes of the scale, dwelling chiefly on the necessary chords, that is, the chords of the tonic and seventh; in the repetition of which, however, a sameness of method ought to be avoided. Pauses and cadences ought to be made almost exclusively on these two chords, nor should any additional sharp or flat be added. These things are to be observed where the modulation is confined within one key, but we often pass from one key to another, a species of modulation much more extensive in its laws than the preceding, and to which we shall for a little call the reader's attention. In modulating from a major key, it will always be found best to do so from the fifth above the tonic. As to the modulations in the minor modes: from the principal key we may modulate to the third, the fifth, the fourth, and lastly, the sixth, these being given in the order of their preference. "The key of each of these accessary tones is determined by the third of the principal key." This is a general rule throughout, that the keys of the fifth and fourth of the principal key are of the same kind with that key; those of the third and sixth, on the other hand, have minor thirds. In modulation in different keys, it ought to be borne in mind that a composition ought always to begin and end in the same key; and therefore, wherever we leave the principal key for another, whether major or minor, we ought to be prepared to return with ease to it again. Moreover, since the principal key ought to predominate throughout the piece, we ought to dwell longer or shorter on the modulated keys, according to their relation to it, dwelling longer on those whose relation is the more perfect, and the converse.

The Fugue is a species of composition often employed with fine effect, especially in sacred music. It consists in a repetition of certain parts of the melody by different instruments or voices, one after the other; these repetitions being separated from each other by sensible intervals of time. In talking of fugues, it is usual to denominate the part which leads, or goes first, the *guide;* and the part which follows in the repeat, is called the *answer*. The pitch of the answer is different from that of the repeat, nevertheless, the tones and semitones of the one, must be entirely similar to those of the other. The composition of fugues is regulated by certain recognized principles, the chief of which are, that the key note and the fifth ought to be preferred for the opening and conclusion of the fugue, in which case the melody ought not to extend beyond the octave of the key; and if the guide begins or ends with the tonic, the answer ought to open and close on the fifth. Should the melody of the fugue descend from the tonic to the fifth, we may employ the sixth and seventh in the answer; and passing to the fourth, third, and second, we ought so to order the arrangement, that one of the three last notes should come near to the tonic. The fifth must always answer the tonic, and the converse, except in the middle of the air, where the fourth may be substituted; thus affording four degrees from the fourth to the tonic descending, or from the second to the fifth ascending. The bass of the fugue must first be found, then the other parts, in which it is to be remembered, that they ought to follow a similar progression in guide and answer; and if the imitation be in the treble, the bass will carry the same accompanying chords in both. The melody of a fugue should never occupy less time than half a measure, nor should it extend much beyond four measures, otherwise the movement must be rapid; and a fugue ends best on the first part of a measure, when that measure is divided into two parts; or on the third, when it is divided into four: this, however, is not without exception.

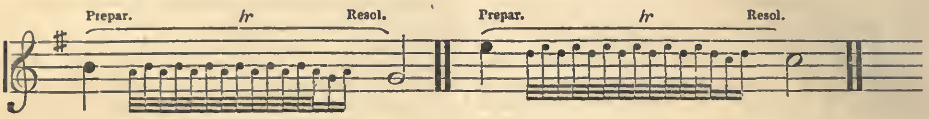
Imitation consists in a continuance of a part of the melody in the bass, or any other of the accompanying parts. This is repeated at pleasure, depending entirely on the will of the composer.

The Canon consists of an air, the subject of which is repeated in all the parts, and may therefore be regarded as a species of fugue. These repetitions are managed so as to keep within the range of the voices or instruments employed; and it is usual for them to be taken in the unison, or in the octave. The subject is first invented, and then the number of parts chosen in which the piece is to be composed, of which the melody is formed, one part serving as a prolongation of another; then the air commences in one of the parts, and when the subject is finished, it is followed in another.

We shall conclude this section by an explanation of some characters employed in musical notation.

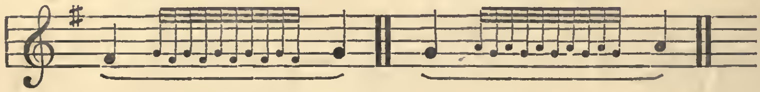
The use of the single and double bar has been already explained in treating of melody; but it is here to be observed, that when a double bar occurs with dots on each side, the part which it terminates must be again repeated. Sometimes, however, it is necessary to repeat a portion of an air, which is not terminated by a double bar, and this is denoted by placing the mark :S: above the last note in the repeat. The same thing is sometimes done by placing below the last note the letters D.C., i. e. DE CAPO, *repeat the strain.* The slur ⌒ placed over or under any number of notes, denotes that they are to be performed as if sliding into one another, that is, that the transition from the one note to the other shall be as little marked as possible. Nearly allied to the grace of slurring, is that of gliding, denoted by the mark ⥲ or ⌣, and is performed by passing from one note to another, by rising or falling from the pitch of the first to that of the second, by imperceptible degrees. This grace is easily executed on the violin, by sliding the finger gradually on the board from the stop of the one note to that of the other, while the bow continues to act on the string; and thus the first tone becomes so gradually lost and beautifully blended with the second, that the transition is almost imperceptible. The glide is frequently imitated by taking the chromatic interval between the first and last note, and this is the only way in which this grace can be at all approached on the piano forte. As was remarked on a former occasion, the figure 3 placed over three notes tied together, shows that they should be performed in the time of two; so 6 placed over six notes, shows that they ought to be performed in the time of four; and 9 placed over nine notes, shows that they ought to be performed in the time of six of the same kind. The *hold*, marked thus 𝄐, when placed over a note, shows that the performer may or ought to dwell longer on it than the time it would otherwise employ. The same mark is, however, sometimes employed to show the final ending of a piece. A grace is often employed, with excellent effect, called the *stoccata*, marked | | | | or · · · ·, placed over or under the notes, and shows that they ought to be performed with spirit, and held only half their time, the interval between each tone being filled up by an imaginary rest. This grace is executed on the violin by striking the string with the thumb instead of the bow. The mark *tr.* placed over or under any note shows that a shake ought to be performed. A simple shake is only the distinct sounding of two notes in equal motion; but a perfect shake consists of three diatonic notes, the first of which is denominated the preparatory note, and the last two the resolvents. The construction of a shake will be understood from the example below.

SIMPLE SHAKE ON A♮. PERFECT SHAKE ON D♮.

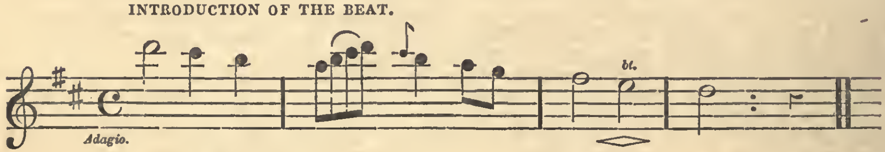


Nearly allied to the shake, is the beat, marked *bt.*, and differs from the shake in this, that the former is prepared from the note below, while the latter is prepared from the note above. This will be understood from the examples below. It only remains farther to be remarked on this subject, that at the conclusion of a slow movement, and more particularly in a solo, the beat and shake may be joined together with good effect, both having the same progressive motion, as may be seen in the undermost of the two following lines:

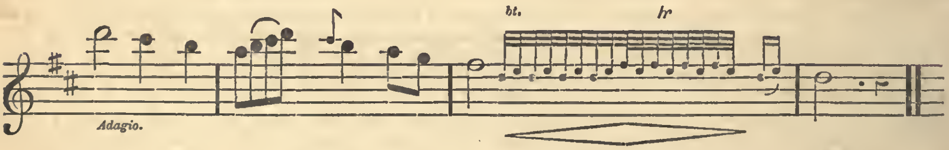
BEAT ON G♮. BEAT ON A♮.



INTRODUCTION OF THE BEAT.

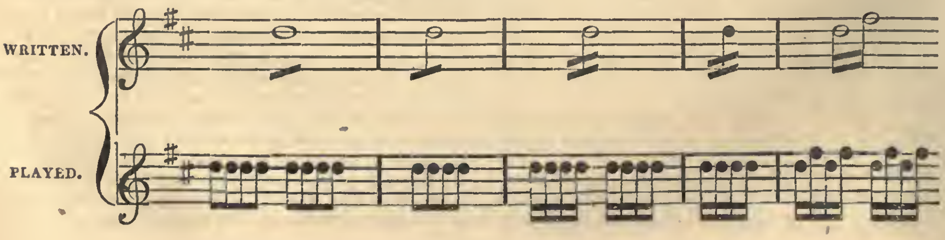


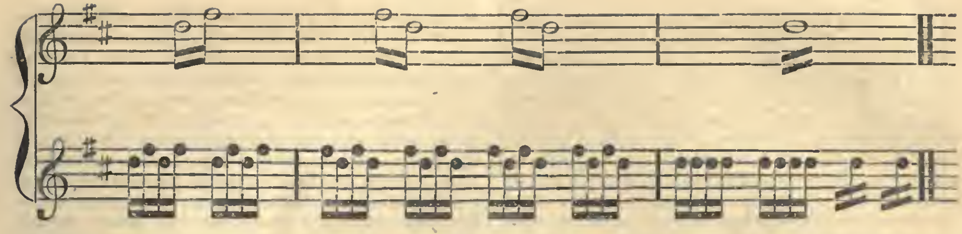
EXPLANATION.



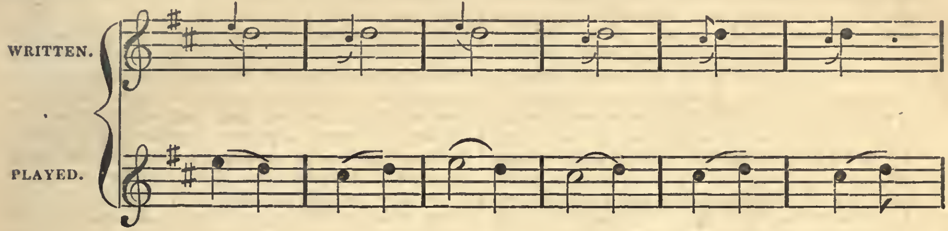
To the same class of graces belongs variation, marked thus ∿∿∿∿, denoting a tremulous motion similar to the shake, but not characterized by such distinctness, and should, therefore, as it expresses faltering, only be introduced in passages of great pathos. The mark < placed under or above a note or a parcel of notes, shows that the performer is to begin faintly, and gradually increase the strength, but not the pitch, of the tone. The mark > in like manner denotes a gradual diminution in the strength of tone. These two marks are frequently combined, forming what is called the swell <>, denoting first a gradual increase in the strength of tone, and then a gradual decrease towards the conclusion.

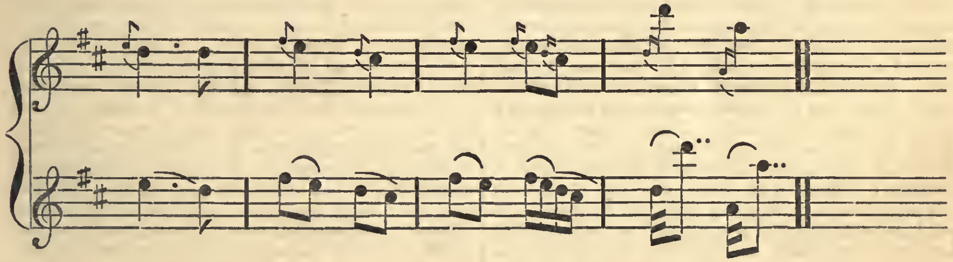
The marks / // are drawn through long notes to show that they ought to be formed by division, thus:



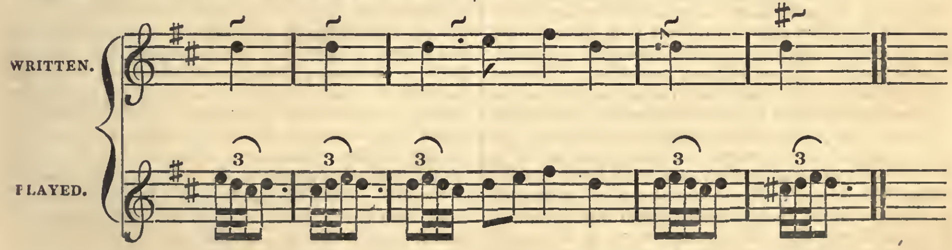


The Appogiatura is a small note placed before another, to lead it in more gracefully;—it is to be observed, that the time taken up in sounding the first note must be taken off the principal note. This grace may more frequently than any other be introduced with good effect;—the manner of its performance will be learned from the following example:





The turn marked thus ~ is an embellishment formed of appogiaturas, consisting of the note on which the turn is made, the note above and the semitone below. The method of executing the turn will be understood from what follows.



The only other character which we think it necessary to notice in this place, is the direct w; which, being placed at the end of the stave, points out the next following note.

Music, History of. In the preceding part of this article, we have given our views respecting the origin of this art. It seems to us a very poor idea to consider it as having begun with the imitation of birds or other animals, or of any of the ordinary sounds of nature; while the natural expression of emotions by sounds would easily lead to a repetition of these sounds, the consequence of which would be music. We do not deny that when once the disposition for music, or at least for the utterance of a series of tones, was awakened, the sounds of surrounding nature may have had an influence upon man, and excited him to try to form a variety of tones with his voice. Wherever we find music, even in its rudest beginnings, we find also instruments; so that, as far as respects the known history of this art, we must consider the development of vocal and instrumental music as coeval. Perhaps the first instrument invented was the pipe of the shepherd, who, in his life of leisure, heard the wind whistle among the reeds. It seems probable that shepherds first cultivated music as an art, while warriors may have made use of the exciting war-cry and war-song before. Instruments, as was observed above, served, in the beginning, only as an accompaniment. According to the Mosaic records, Jubal, the son of Lamech, played on musical instruments, even before the deluge. At a later period, we find among the Hebrews, as is the case in the early periods of all nations, the character of poet and singer united in the same individual, and with them we also find the alternating chorus. The musical instruments which accompanied these songs were harps, citherns, trumpets, and drums. One of the oldest songs, with instrumental accompaniments, is that which Miriam (sister of Moses) sung, after the passage of the Red sea. At the time of David and Solomon, music had reached its highest perfection among the Hebrews, and part of their religious service consisted in chanting solemn psalms, with instrumental accompaniment. As well as we can judge, from the information handed down to us, and even from the structure of Hebrew poetry itself, of which a certain parallelism or repetition of the main idea in the different members of a sentence was the chief characteristic, it had a very distinct rhythm, a varied melody, but a monotonous, though strong accompaniment, as was the case with the music of most ancient nations. They had also proper musical signs, which were put over the musical text, and which served to guide the recitation. (See George Ventzky's *Thoughts on the Notes, or Musical Signs, of the ancient Hebrews*, in Mitzler's Musical Library, 3d volume, in German; and Anton's *Essay towards deciphering the Melodies of the ancient Hebrew Songs*, in Paulus's New Repertory for Biblical and Oriental Literature, 1st and 2d vol., in German.) Their music, however, was employed not only in the celebration of religious service, in which, particularly since the time of David, a great number of singers, male and female, and instrumental performers, were employed, but also at profane festivals, such as large entertainments. At this time, the different kinds of instruments were increased, among which the *kinnor* (triangular harp), and the cymbal, are mentioned particularly. (See Herder, *On the Spirit of Hebrew Poetry*, 2d vol.; Pfeiffer, *On the Music of the ancient Hebrews*, Erlangen, 1779, in German.) Pauw (in his *Recherches*, vol. i. p. 244) has gone too far in asserting that the Egyptians are not known to have had either music or poetry. The tradition that Thout or Thot (the genius of science and art, according to Creuzer) invented music, proves, indeed, nothing; but, in the tomb of Osymandyas, near Thebes, musical instruments have been found, and it has been concluded that the Egyptians must have been acquainted with music 2000 years B. C. That the Hebrews received the art from them would not, however, be proved by that circumstance, though it may be, for various reasons, probable. We pass over the mythological accounts respecting the origin and perfection of the art of music among the Greeks. The traditions indicate that they received this art, or, at least, great improvements in the execution of it, from Lydia, where Amphion is said to have learned music, and Arcadia, where the shepherds practised on the pipe, flute, and cithern. From the provinces of Asia Minor, the different modes (q. v.) of Greek music—the Phrygian, Dorian, Lydian, Æolian, and Ionian—are derived. Their song, as it would appear from what we can gather from the ancient authors, consisted in a musical recitation, accompanied by one or more instruments to support the rhythm. From the sixth century B. C., music seems to have been studied scientifically, and particularly the tones were measured. Lasus of Hermione, in the Peloponnesus, who lived about 546 B. C., and was the teacher of Pindar, is said to have written something on the theory of music. Pythagoras (q. v.), who is said to have learned music from the Egyptian priests (which, however, is considered improbable), occupied himself with the mathematical relations of tones. The instrument which he invented for the mathematical determination of sounds was called the *Pythagorean canon*. He is also said to have added the eighth chord to the harp, to which several others were afterwards added. Damon is mentioned as one of the most distinguished teachers of music in the times of Pericles and Socrates. Plato asserted that his music could not be changed without changing the constitution of the state itself. Plato and Aristotle considered music useful as a means of education. In their time, the scale was considerably increased; but, at the same time, complaints arose against the degeneracy of music and of the national manners through its influence. A similar complaint was made against Phrygius, who lived in the time of Socrates. Probably the cause of it was the application of music to the expression of the more tender feelings, as love, &c., while it had been previously used chiefly to awaken patriotic or religious feeling, as with the Lacedæmonians. The division into theoretical and practical music was probably known even then. Theoretical music comprised as well the arithmetical calculations respecting the proportions of sound and tones, as the doctrine of harmony, which teaches the general rules of all the various concords. Composition and song depended upon this branch. The latter, and thus music in general, was divided, according to the proportions of the tones required in the different sorts of music, into the diatonic, enharmonic, and, at a later period, the chromatic. In regard to the tones, which were the basis of the compositions, certain modes were adopted, denominated, as has been already stated, from the countries whence they chiefly came. Music was divided, also, in respect of composition, into, 1. *melpœia* (the art of composing the song, that is, the art of giving to poetry the proper song, or mode of recitation, because the recitation, or declamation, was also indicated by notes); 2. into *rhythmopœia* (the art of giving a proper rhythm to the motion of the body or the voice); and, 3. into *poetics* (the technical part of poetry, connected intimately with music in those times): to this belonged metrics. As to execution, music was divided into *organic* (instrumental music), *æodic* (vocal music) and *hypocritic* (pantomimic action in connexion with music). At the time of Alexander the Great, Aristoxenes, a pupil of Xenophilus and Aristotle, distinguished himself. He wrote a great number of treatises on music, of which three are still extant, and extended the scale to eighteen chords, which were divided according to tetrachords and pentachords. His pupils (called the *Aristoxenians*) rejected the strict proportions of Pythagoras, and made use of the intervals of whole and half tones, guided merely by feeling. Aristoxenus also introduced the chromatic music, the invention of which belongs to this time, instead of the enharmonic. Euclid (277 B. C.) is the first writer who treated the mathematical doctrine of sounds. With the decline of liberty, music also sunk, like the other arts. But the inference drawn from the perfection of the other fine arts among the Greeks, that music had attained a corresponding advancement, is very problematical, and is not confirmed by the information which has been handed down to us. It rather appears that Greek music was not possessed of harmony in its whole fullness, and of that splendour and variety which the art attained after the perfection of instrumental music. The many stories of the miraculous effects of music prove nothing. Very simple and poor music may be considered as excellent by a nation which knows of none better: witness the glowing description of beautiful music in the tales of the East, notwithstanding the low state of the art in that quarter of the globe. The Greek song seems to have been a rhythmical recitation, with a simple accompaniment, in which the tones had less a musical than rhetorical duration. The many investigations of the moderns respecting the music of the ancients give us, on the whole, but little light on the subject, and the existing writings of the ancients themselves are, in a great degree, unintelligible, on account of the many contradictions and obscurities in them.—See the collection of the ancient musical writers by Meibom—*Antiquæ Musicæ Scriptores* (7 vols., Amsterdam, 1656, 4to). and Claud, Ptolemæus.)—Of late, Munch and Von Drieberg have written on the music of the ancients. Chladni (q. v.), however, has opposed their conclusions in many particulars, in the Musical Gazette of Leipsic. Caspar Bartholin has written on the wind-instruments of the ancients (*De Tibiis Veterum*). The Romans seem to have received the music which they used at sacrifices, together with the religious service, from the Etruscans, but the instrumental music, used on the stage and in war, from the Greeks. Stringed instruments are said to have been introduced into Rome as late as 186 B. C. In general, the Romans, so warlike in their disposition, most cultivated martial music. At an early period of their history, it was a great hinderance to the progress of the art that it was practised only by slaves. With the Romans, *canere* and *carmen* signified the musical recitation, which was accompanied by instruments, and which seems to have stood in the same relation to rhetorical recitation as the poetic *rhythmus* to the *numerus* of prose; to which we must add, however, that orators had the intonation given by instruments at the beginning of their speech and during the same. The Romans made use of their capital letters as notes. On the stage, the song was accompanied with flutes. The instruments first preluded, then the actor began; and, probably, the instrumental accompaniment continued in simple concords, or made short pauses, and supported or heightened the emphatic expression by recommencing. The choruses seem to have been accompanied differently from the monologue and dialogue. This accompaniment consisted of flutes and other wind-instruments, comprised with the Romans under the name of *tibiæ;* sometimes, also, of the lyre and cithern. The flutes were different, according to the comic or tragic poem which they had to accompany: hence there were *tibiæ dextræ* and *sinistræ*, the former particularly intended for the serious, the latter for the comic, passages, and for comedies. Horace, in his *Epistola ad Pisones*, says that, formerly, only simple wind-instruments, with a few holes, had been used; no flutes which vied with the trumpets (*tubæ*). Rhythm and melody, he says, had become less strict. At later periods, still louder complaints were raised against the noise of the instruments, which obliged the actor to raise his voice extremely. In all this, the Greeks had preceded the Romans. Under the four emperors, particularly Nero, music was cultivated as an object of luxury. After his death, 500 singers and musicians are said to have been dismissed. (For the way in which sacred music grew up among the first Christians, see the articles *Music, Sacred;* also *Italian Music*, in the article *Italy*, vol. iv., p. 188.) The solemn church song or hymn, which was first sung in one voice only, or in octaves, is the basis of modern music. It was sung without rhythm or time (in *canto fermo*). A later invention is the figured music, which, according to some, existed even in the seventh century, in the Roman church; according to others, was invented by the English monk Dunstan (who died 988). The progress of music was promoted, in the middle ages, by its being consecrated to the service of religion, and belonging to the *quadrivium*, the four branches of a learned education,—arithmetic, geometry, astronomy, and music. Several investigations into the nature of music were made, which are found in Mart. Gerbert's *Scriptores ecclesiastici de Musica Sacra.*—See, also, Forkel's *General Literature of Music* (in German, Leipsic, 1792).—Guido of Arezzo (whose works on music are also to be found in the collection just mentioned) contributed greatly to the improvement of music. The correction and extension of the system of tones, the division of tones into hexachords, the improvement in the manner of writing the notes, by the introduction of the system of lines, the invention of the *solmization* (q. v.), and of counterpoint, are generally ascribed to him. Johannes de Muris is said to have improved the mode of writing notes in the fourteenth century, and also the figured music. Franco of Cologne, in the eleventh century, is mentioned as the inventor of the musical time-table, and as the first approved writer on measured music, which the invention of counterpoint and the fugue depended. In the fifteenth century, music was treated scientifically in the Netherlands, France, and Spain. The organ (q. v.) contributed much to the development of harmony. The Flemish school, to which belongs, among others, Orlando Lasso (q. v.), preceded Palastrina, generally called the founder of modern church music. From the sixteenth and seventeenth centuries, there grew up at the courts of monarchs the free chamber style, and, from this, the theatrical style. The invention of the opera, in the sixteenth century, has chiefly contributed to the splendour and variety of modern vocal music, and the astonishing improvement of the most various instruments greatly advanced instrumental music, and, at the same time, harmony, in the latter half of the eighteenth century. (See the history of music in the articles of the various countries.) The merit of the advancement of vocal music is claimed particularly by the Italians; the improvement of instrumental music by the Germans and French. As to the modern mathematical systems of music, Huygens, Saveur (about 1701), Rameau (about 1722) and Euler (*Mathematical Inquiries respecting Music*), deserve to be mentioned as inventors. The history of music has been treated fully by Giamb. Martini (*Storia della Musica*, Bologna, 1757 et seq.), by Marpurg (*Kritische Einleitung in die Geschichte und Grundsatze der alten und neuern Musik*, Berlin, 1759), by Burney (q. v.), from whose great work that of Busby (London, 1820, 2 vols.) was compiled, by Hawkins, and by J. N. Forkel (*Allgemeine Geschichte der Musik*, 2 vols., 4to, not finished). Von Hammer gives contributions to the history of Oriental music, from the Persian, in his *Fundgruben des Orients* (4th vol.); see, also, Pauw's *Recherches;* and, for the music of Egypt and Abyssinia, a letter by Bruce, in Burney's General History of Music.

MUSIC, Sacred. Almost all nations who have an established religious service have made music an important part of it; and, in a general sense, we might give the name of *sacred music* to all music employed in religious festivals, even before the Christian era, as that of the Egyptians, Hebrews, Greeks, and Romans, as well as to the religious songs of the bards and scalds. The early Christians, who were led by various passages in their sacred writings to employ religious songs, introduced at their religious meetings, particularly in the Eastern churches, the singing of the psalms and hymns, which are to be found in the books of the Old Testament, and to which the Jewish converts had been already accustomed in their assemblies. They sang, also, at the Lord's supper and at the agapes. At the synod of Laodicea (364), regular songs were introduced, which were sung from notes by persons appointed for this purpose. The Western churches received, through Ambrosius (q. v.), bishop of

Milan, a regular church music, similar to the Eastern. Probably this possessed a regular modulation and rhythm, only that both were defective through the imperfection of the music at that time; and the latter appears to have been limited to long and short tones: the first was founded upon the Grecian modes remaining in Italy, and was very poor. Perhaps many of the melodies of Grecian and Roman hymns now received words adapted to the religious worship of the Christians. The Christian fathers bear witness to the use of songs in the Christian communities in the first century, and many of them, as Ambrosius and Augustine, were great admirers of them. In regard to the manner of singing in the first assemblies, it was sometimes in solo, sometimes alternately, and sometimes there was a chorus of the whole assembly, who united in repeating short passages, before sung or read, from which, probably, the female sex was at first excluded. For the regular ordering of the singing, precentors were instituted in the fourth century, who were considered as inferior officers of the church. Schools appropriated to singing were instituted later, and only in a few places. Pope Gregory the Great (500—604) distinguished himself in the Roman church as the founder of a new singing-school, in which boys were instructed. It was the model of many other institutions of this kind. In consequence of this education of persons for singers, the singing was not only more artificial, but the people were also, for the most part, excluded, particularly as the hymns were in Latin. Gregory collected in his *Antiphonarium* the existing songs of the church, which he selected from the best ancient melodies, improved and increased by the addition of new ones. The *Gregorian Chant*, so called after him, was sung in unison with loud notes of similar value, without rhythm and metre (by which it is particularly distinguished from the Ambrosian), or in the old Grecian modes, but with a more complex modulation. This Gregorian or plain chant, which, by means of Gregory and his successors, has been extended throughout the West, is the foundation of the Christian church music. It was also called *choral song*, because it was sung by a choir. The Gregorian Chant was first carried into Britain and France. Charlemagne, who laboured particularly for its diffusion, caused several singing schools to be established in France, and united them with the monasteries. The Gregorian Chant was probably introduced into Germany by Boniface, but it was first generally diffused there in the time of Charlemagne. The development of the music for four voices may have been assisted by the choral; but musical instruments contributed yet more thereto, as well as to the formation of perfect harmony; among these, the organ (q. v.) particularly, which soon took the first rank in the churches. Now figured music arose, and likewise figured song (*cantus figuratus*), which, in the fifteenth century, began to become general, as the custom grew up of varying, extending, and embellishing the accompanying voices of a melody, while the chief voice, upon which the fundamental melody depended, remained unchanged (hence it was called *cantus firmus*, *canto fermo*, plain-chant); but, still, the chief voice often became the under voice. This happened afterwards, also, with melody. The invention of measured music caused the choral to be performed in a more regular measure, and gave greater extent to harmony. Choirs of singers now became necessary, and singing was often applied, especially in Italy, to heighten the splendour of religious worship. (See *Italian Music*.) The organ was continually improved, after the fifteenth century, and other instruments, also, were introduced into the church, against which complaints were often made, as well as against the new figured music in general, which found peculiar support in the instrumental music. Yet these complaints were chiefly directed against the abuse of the figured and instrumental music, and they were not able to banish them from the church. The fifteenth and sixteenth centuries form a new period of church music, which was extended by the great masters in Italy, France, the Netherlands, and Germany. Luther's services to the German church music are well known, for which he laboured, by means of his friend Senffel. During the seventeenth and eighteeuth centuries, church music became continually more brilliant, and always more corrupted by the intermixture of profane music. In the Roman Catholic church, the sacred music is confined to fixed forms of text; for instance, the text of the mass, the *Offertoria*, *Te Deum*, *Salve*, Requiem, Psalms. In the Protestant church, poets and composers allow themselves new forms.—The greatest modern composers of sacred music are Palastrina, Allegri, Durante, Morales, Lolli, Scarlatti, Lasso, Caldera, Leo, Pergolesi, Handel, Bach, Graun, Hasse, Jomelli, Stolzl, Kerl, Rolle, Naumann, Schulz, Kunzen, Wolf, Mich. and Jos. Haydn, Mozart, Volger, Cherubini.

MUSIC OF THE SPHERES. See *Harmony of the Spheres*.

MUSK (*moschus*). The musk tribe have no horns. In the lower jaw they have eight incisors, and, in the upper, two long tusks, one on each side, projecting some distance from the mouth. They are celebrated from one of the species affording an odoriferous substance, which has long been used in perfumery and medicine. This substance was long known, before any authentic information could be obtained respecting the circumstances, form, and manners of the animals that produced it. The principal species is the Thibet musk (*M. moschiferus*), which is about two to three feet high. Its upper jaw is considerably longer than the lower. Its tusks are nearly two inches long, and project considerably. Its ears are long and narrow. The hair of the body is long, and stands erect; each hair is marked, from tip to root, with waves; the colour, at the lower part, is cinereous; in the middle, black; and at the tip, ferruginous. The hoofs are black, and deeply cleft. The tail is very short. The male is furnished with a small bag, nearly of the size of a hen's egg, in which is contained the musk. This hangs from the abdomen. A full grown male will yield a drachm and a half, and an old one two drachms. The bag is furnished with two small orifices, the one naked, and the other covered with hairs. The hunters cut off the bag, and tie it up for sale, but often adulterate its contents by mixing other matters with them. It has been asserted, that when the musk bag is first opened, it has a very powerful effect on the membrane of the nose, sometimes even to such a degree as to cause a flow of blood. This animal is a native of many parts of Asia, and particularly of the kingdom of Thibet. As it is naturally timid, it lives on the cliffs and summits of lofty mountains. In running, leaping, and climbing, it displays astonishing agility. Few animals lead the hunter into greater dangers, or require more address and activity in the chase. But the value of the musk induces the pursuer to brave every danger. In the autumn, however, they assemble in herds, to migrate to a more genial climate: at this time they are taken, or shot, in great numbers. The other species do not furnish any musk. These are the *memimna* (*M. memimna*), a native of Java and Ceylon. It is diminutive, being not more than a foot and a half long. The Java musk (*M. Javanicus*) is also small (about the size of a rabbit), with remarkably slender legs. But the most beautiful species is the Guinea musk (*M. pygmæus*), which, notwithstanding its name, is more common in India and the Oriental Islands, than in Guinea. This graceful and diminutive creature is only about nine inches in length, with slender limbs, and smooth shining hair. The Malays capture them in great numbers, and carry them about in cages for sale. The American musk (*M. Americanus*) is only the young, or the female of one of the species of South American deer; and the *M. delicatulus* of Shaw is the fawn of the American stag.

MUSKETOON; a short thick musket, whose bore is the thirty-eighth part of its length: it carries five ounces of iron, or seven and a half of lead, with an equal quantity of powder.

MUSK OX (*ovibos moschatus*). This animal, which Mr Blainville has considered as intermediate between the sheep and ox, inhabits the barren country in America, to the northward of 60° of latitude. This district is mostly rocky, and destitute of wood, except on the banks of the larger streams. Their food is similar to that of the moose—grass at one season, and lichens at another. When they are fat, their flesh is well tasted; that of the bulls, and even of the cows, when lean, smells strongly of musk. Notwithstanding the shortness of their legs, they run fast, and can climb hills and rocks with great ease. They assemble in herds of from twenty to thirty. The female brings forth one calf in May or June. Doctor Richardson states, if the hunters keep themselves concealed when they fire upon one of the herds, the poor animals mistake the noise for thunder, and form themselves into a group, crowding closer and closer as their companions fall; but should they discover their enemies, either by sight or by their sense of smell, which is very acute, they seek for safety by instant flight. The bulls are, however, irascible, and will often attack the hunter, and endanger his life, particularly when they are wounded. The musk ox is about the size of a small domestic ox. Their horns are very broad at base, covering the forehead and crown of the head; they curve downwards between the eye and ear, until about the level of the mouth, when they turn upwards. The head is large and broad, and the nose very obtuse. The ears are short, and not very conspicuous. The general colour of the hair of the body is brown. On the neck and between the shoulders, it is long, matted, and somewhat curled: this bushy state of the hair on those parts, causes the animal to appear humped. The hair on the back and hips is also long, but lies even and smooth. On the shoulders, sides, and thighs, it is so long as to hang down below the middle of the leg. On the centre of the back it has a soiled, brownish-white mark, termed, by capt. Parry, the *saddle*. The tail is so short as to be concealed in the fur. There is a large quantity of fine, brownish, ash-coloured wool or down among the hair. This is so fine and soft as to resemble silk, and would be highly useful in the arts, if it could be procured in sufficient quantity. The legs are short and thick, and furnished with narrow hoofs, resembling those of the moose. The female, which is smaller than the male, has also smaller horns, whose bases do not touch. The first account of this animal was given by M. Jeremie, in his travels in the northern part of America, after which it was noticed by every subsequent voyager. Pennant, however, was the first who systematically arranged and described it, from the skin of a female sent to England by Hearne. As is observed by doctor Richardson, it is remarkable, among the American animals, for never having had more than one specific appellation, whilst other animals, of less interest, have been honoured with a long list of synonyms. See Richardson's *Faun. Am. Bor.* from which the foregoing account has been principally derived.

MUSK RAT (*fiber*). This well known animal, which is so closely allied in form and manners to the beaver, has a thick and blunt nose, and short ears, which are almost concealed in its fur. The colour of its body is reddish-brown; the belly and breast are of an ash-colour, slightly mixed with a ferruginous tint. The hair is soft and glossy, and beneath it is a thick coat, which is much used in the manufacture of hats. On the hinder feet, instead of the web connecting the toes, as in the beaver, there is a stiff fringe of hair, which is closely set, and projects from the sides; the front toes are free and unconnected. The tail is thin at the edges, and compressed, covered with small scales, with a few scattered hairs, is about nine inches long, or nearly that of the body, which is twelve. The flesh is not eatable from the strong odour of musk which pervades it. The musk rat is exceedingly common in most parts of the United States of America, particularly in the Northern. In Carolina, Georgia, &c., Bartram states that it is never found within one hundred miles of the sea coast. These animals reside along small streams, mill races, and ponds, apparently forming their habitations according to the nature of the locality. Where the banks have some elevation, they form large and extensive burrows, which have entrances below the surface of the water, and gradually ascend till they terminate in a chamber above the level of high water. These burrows are most frequently made under the roots of trees, or in other situations of difficult access. These excavations are of great injury to artificial embankments along canals and rivers, by permitting the water to undermine, and to make large breaches in them. When, however, these animals inhabit low and marshy situations, they construct houses not very unlike those of the beaver, composed of reeds, &c., mixed with clay. These houses have several subterraneous passages leading to them, and are inhabited by many individuals during the winter; but in the warm weather, they desert them entirely, and dwell in pairs, whilst they rear their young, of which they have from three to six at a litter. The houses are constructed in the marsh or swamp, but not in the stream or pond, and a new one erected every season. Hearne says, that the tops of these houses are favourite breeding places for the geese, which bring forth their young there, without the fear of being molested by foxes, or any other destructive animal, except the eagle. He also states, that, on Hudson's bay, instead of making their houses on the banks of the water, they build them on the ice, always taking care to leave a hole, to permit them to dive for their food. When the weather is so severe as to freeze these holes, and they suffer from hunger, there is strong reason to believe, that they prey on each other. Their usual food is the roots, &c. of aquatic plants, particularly the calamus: they also destroy immense quantities of the different species of fresh water muscles (*unio*), the shells of which are always to be seen about the entrance of their burrows. They will also feed on fruit, and one of the common baits used in traps for them, is an apple. They swim remarkably well, and are capable of remaining under water for a considerable time. They usually come forth in the night, generally remaining in the burrows during the day time. Among the traders to the north, they are known under the name of *musquash*.

MUSSCHENBROEK, PETERVAN, a celebrated natural philosopher, born at Leyden, in 1692, studied in the university of that city, and entered upon the practice of medicine. Similarity of scientific tastes united him (1717) in a close intimacy with the celebrated S'Gravesande, with whom he pursued his studies in natural philosophy. After practising his profession four years, Musschenbroek was appointed (1719) professor of philosophy and mathematics, and extraordinary professor of medicine at Duisburg, and soon acquired such a reputation that he was called (1723) to fill the philosophical and mathematical chair at Utrecht, and, in 1740, was invited to Leyden, to occupy the place left vacant by the death of Wittichius. He died there in 1761. His principal works are *Elementa Physica; Tentamina Experimentorum* (1731); *Institutiones Physicæ* (1748); *Compendium Physicæ Experimentalis* (1762). Musschenbroek rendered important services to science. His experiments and his calculations prove his sagacity and accuracy. He invented the pyrometer, which has since been improved by Lambert.

MUST; the juice of the grape, which by fermentation is converted into wine. In the wine countries this unfermented sweet must is distinguished from the sour must, or unripe wine, of a year old. Fresh must contains a good deal of sugar and mucilage, which last disposes it to fermentation. It can be kept in close vessels, after the mucilage has been precipitated.

MUSTARD (*sinapis nigra*) is a native of Europe, and is very commonly cultivated for the sake of the seeds, which, when powdered and mixed with vinegar, form a well known pungent condiment in daily use. The root is annual; the stem three or four feet high; the lower leaves are lyrate, and the upper ones lanceolate and entire; the flowers are small and yellow. It belongs to the natural family *cruciferæ*, and is known by the smooth, four-cornered pods, which are pressed close to the stem. Table mustard, mixed with warm water, and taken in considerable quantities, acts as an emetic, and, as such, is so much the more valuable from its being always at hand. The white mustard (*S. alba*) is milder than the preceding, and, on this account, is more agreeable to some palates.

MUSTER, in a military sense; a review of troops under arms, to see if they be complete and in good order; to take an account of their numbers, the condition they are in, viewing their arms and accoutrements, &c.

MUSTER ROLL; a list of the officers and men in every regiment, troop, or company, which is delivered to the inspecting field-officer, muster-master, regimental or district paymaster (as the case may be), whereby their condition is known.

MUTINY, on board of a merchant vessel, was not formerly punishable by death, in Britain; but now, by statute 11 and 12 William III., c. 7, sec. 9, made perpetual by 6 George I., c. 19, it is enacted, that any seaman or mariner, who shall, in any place where the admiral has jurisdiction, lay violent hands on his commander, whereby to hinder him from fighting in defence of the ship and goods committed to his charge, or shall confine his master, or make or endeavour to make a revolt in the ship, shall suffer pains of death, loss of lands, goods, and chattels, as pirates, felons, and robbers upon the seas have suffered and ought to suffer. Similar offences, such as the running away with the ship, or any barge, boat, ordnance, ammunition, goods, or merchandises, the yielding of them up voluntarily to pirates, the bringing of seducing messages from pirates, enemies, or rebels, the confederating with, or attempting to corrupt, any commander or mariner to yield up or run away with the ship, &c, the turning pirate, or going over to pirates, are, by the same acts, punishable in the same way. By other statutes, the wilful destruction, casting away, or burning of any ship, with intent to injure the owner, is punishable with death. In case of mutiny, the master is justified in using means sufficient to repress it; and if the death of any of the mutineers ensue, the master is justified, provided the force which he uses be fairly required by the exigency of the occasion; and the master's conduct is not to be scanned too nicely, as it must be borne in mind, that he is generally far removed from all assistance, and that his own safety and that of the ship and cargo chiefly depend upon the due maintenance of his authority. Mutiny in the royal navy is punishable under the provisions of the statute 22 George II., c. 33, which contains the rules or articles of the navy. Among the numerous offences enumerated in that statute, those which partake of the character of mutiny are as follows: the running away with the ship, or any ordnance, ammunition, or stores belonging thereto, the making or endeavouring to make any mutinous assembly, the uttering of any words of sedition or mutiny, the concealing of any traitorous or mutinous design, the striking of a superior officer, or drawing or offering to draw or lift up any weapon against him, being in the execution of his duty, on any pretence whatsoever, the presuming to quarrel with a superior officer, being in the execution of his office, or the disobeying of any lawful command of a superior officer. All the above offences are punishable with death. With regard to some, and those the least heinous of them, the court martial has a discretionary power of awarding a less punishment. The behaving with contempt towards a superior officer, being in the execution of his office, the concealing of traitorous or mutinous words spoken by any, to the prejudice of his majesty or government, or the concealing of any words, practice, or design, tending to the hinderance of the service, and not revealing the same to the commanding officer, and the endeavouring to make a disturbance on account of the unwholesomeness of the victuals, or on any other ground, are punishable with such punishment as a court-martial shall think fit to award. Mutiny in the army is punishable under the mutiny act. By this act the king is empowered to make articles of war; i. e., rules or orders for the better government of the army. The mutiny act provides that no offence shall be made punishable with death, except those which are specified therein. These are, mutiny and sedition; not endeavouring to suppress the same; not giving information of the same to the commanding officer; misbehaviour before the enemy; shamefully abandoning or giving up a post; compelling the commanding officer so to do; leaving one's post before relieved; being found sleeping on one's post; holding correspondence with any rebel or enemy; entering into terms with the same, without the license of his majesty or of the commanding officer; striking or using violence towards a superior officer, being in the execution of his duty; disobeying any lawful command of a superior officer; and deserting. The laws of the United States of America, for the punishment of mutiny in the army and navy, and on board merchant ships, are very similar to those of Britain.

MUTIS, Joseph Celestino, a celebrated botanist, born at Cadiz, in 1732, was assistant professor of anatomy at Madrid, and made botany the particular object of his attention. Having accompanied the viceroy don Pedro Mesia de la Cerda to New Grenada, in the capacity of his physician, Mutis enriched his favourite science with the description of unknown plants in that region. We are indebted to him for the first accurate accounts of various sorts of cinchona, on which he published a treatise. He died in 1808. His Flora of Bogota, left unfinished at the time of his death, was completed by his nephew.

MUTUAL INSTRUCTION is the name given to that arrangement of schools by which the more able scholars in every class assist and superintend their fellow pupils. This name, which originated in France, is not appropriate, as mutual instruction does not, in fact, take place, but some of the most distinguished scholars occupy the place of the master, while the less able do not in turn instruct them. The origin of this system may be traced to India, where the traveller Della Valle found it established as early as the sixteenth century. The object of this system is to carry on schools chiefly by means of the scholars themselves, and to instruct an uncommon number of pupils at once (Lancaster had 880 together, and says that he could teach 1000), with comparatively few masters and little expense. The pupils are divided into small classes, each instructed by one of the more advanced scholars, in reading, writing, arithmetic, &c., as far as the little teacher has been taught previously by the master. Such little teachers are called *monitors*, and have a class of about ten on a bench, or, as Bell prefers, standing in a semicircle. The oldest and most trustworthy pupils have the superintendence as general monitors. Other assistants take care of the lower departments of service, or the police of the school; one notes down the absent, one rules the writing-books, attends to the distribution of slates, &c. The strictest discipline and order being observed, the whole appears like a great piece of clock-work, which moves without the interference of one part with another. The school resembles an army, which a single man is enabled to command by means of order and discipline, and because every one knows precisely his duty. All are instructed, and teachers are formed at the same time. Cheapness is always kept in view. The pupils commence learning writing by making figures on tables covered with sand; then old paper, written or printed on one side, is taken. In England, where this system was first introduced from India, 500,000 (in London alone, 8000, in forty-three schools), in Ireland, 30,000 children, are educated according to this method, which has been greatly improved of late years. Lancaster was engaged, in 1824, in establishing similar schools under the protection of Bolivar, in the South American republic Colombia. In the British East Indies, a society at Calcutta has established eighty-eight schools on his plan, which has been also adopted at Malta, the cape of Good Hope, on the Senegal, in Sierra Leone, and other English colonies. The Greeks also have made use of this means for the establishment of elementary schools (in which they were entirely deficient), on a cheap plan, at Athens, Argos, and on the islands. From France, an interest for them was excited in Italy, where Tuscany and Parma (the latter since 1822) have permitted their establishment. In Naples and in Spain, where similar schools were established under the cortes of 1821 and 1822, in the principal towns, they were prohibited in 1823. France had, in 1821, as many as 1197 schools for children, and 166 regimental schools, according to this system. The latter were compelled, under the Bourbons, to renounce this method entirely, and the constant opposition of the ecclesiastics and the ministry lessened the number of the former, it being considered dangerous, and savouring of liberalism, to keep on foot such an institution for the improvement of the nation, in a country, where, amongst 24,000,000 of adults, only 9,000,000 could write and read, and of 6,000,000 of children, only 1,600,000 enjoyed the benefit of school education. From a similar cause, this system was prohibited in the Austrian army and throughout Austria; and, in Russia, the zeal with which it was at first received soon abated, so that only attempts on a very small scale were allowed. The Danish government, on the contrary, began, in 1819, with great zeal and success, to introduce these schools in Denmark, Holstein, and Sleswick. The plan, though not the same in all particulars, resembles, in its chief traits, that of Bell and Lancaster. The number of schools in that country has rapidly increased, and, according to a late report, amounted, in 1829, to 2646. Professor Schuhmacher, rector of the cathedral school at Sleswick, in a report on the system of mutual instruction, observes, that it is excellent, so long as it limits itself to matters of mechanical skill or of mere memory. It saves time for the teacher and pupil; it saves expense in the business of education, and is highly beneficial for all elementary schools containing a large number of pupils, differing so much in knowledge and intelligence, that one teacher cannot instruct them all at the same time, but is obliged to divide them into many classes. This method, however, is superfluous in schools in which the number of pupils is so small that the teacher can superintend and instruct them conveniently, particularly where all the members of one class have made nearly equal progress. And even in common schools, it would be injurious to strive to bring every thing into this form, as it would put a stop to the highest kind of instruction; and in the institutions for a more advanced stage of education, where a scientific spirit, independent thought, the formation of the judgment and taste, are the objects, it is more peculiarly inapplicable. Much information respecting this method in Denmark is contained in the *Progrès de l'Enseignement Mutuel en Danemark, extrait d'un Rapport au Roi, par M. d'Abramson, Major*, &c. (Copenhagen, 1825). The proper field of this system is, undoubtedly, elementary instruction. It will hardly be denied that it is of great assistance in teaching the rudiments of knowledge, reading, writing, and ciphering, besides accustoming the pupils to habits of order. It will also be admitted, at least by all who live in popular governments, that every individual ought to be taught reading and writing, without which, in the present state of the world, he is excluded from half the benefits of existence. Where, therefore, a large population is imperfectly supplied with the means of instruction, schools of this character will be of great benefit. Besides, all primary instruction must be addressed chiefly to the memory, notwithstanding learning by rote is so much decried in our day; and teachers, we imagine, might often accelerate the progress of their pupils in the branches taught in early childhood, by a more extensive application of the system of mutual instruction. The late king of Portugal established, in 1824, a central school on these principles, at Lisbon, through the instrumentality of professor Lecocq; but it has probably long since been destroyed by the violent convulsions of that unhappy country.

MYCENÆ; an ancient city of Argolis, Peloponnesus, eighty stadia from Argos, built by Perseus. It was the residence of Agamemnon, and its ruins are still seen in the state in which they were described by Pausanias. The Lions' gate, the vaulted building of enormous stones, called the *treasury of Atreus*, &c., are minutely described by Leake (*Travels in the Morea*, 1830).

MYCONI (anciently *Myconus*); an island in the department of the Northern Cyclades, in the Grecian Archipelago, about twenty-one miles in circuit; lon. 25° 23′ E.; lat. 37° 27′ N.; the population, at present, is about 4500, according to Anderson (*Observations*, &c., 1830). They are Greek Christians, and distinguished navigators. The chief town, Myconi, a seaport, contains about 4000 inhabitants. The soil is dry and mountainous, but the mountains are not very high. It produces little wheat, but plenty of barley, raisins, and figs, with some olives. Partridges, quails, turtle-doves, beccaficos, and rabbits, are in the greatest plenty.

MYLITTA; the Venus of the Assyrians (with the Arabians, *Alitta*, and with the Persians, *Mythra*). She was, as goddess of the moon, the female principle of generation. Among the licentious Babylonians, it was the custom for every woman to prostitute herself once to a stranger for a certain sum of money, in the temple of Venus Mylitta. The money was deposited by the woman in the treasury of the temple. Herodotus relates, that the women, with wreaths on their heads, seated themselves in the porticoes of the temple, through which the strangers passed to make their selection. They dared not return home till some stranger had thrown into their lap the money, with these words, "I invoke for you the goddess Mylitta."

MYLNE, Robert; an architect of eminence, memorable as the builder of Blackfriars bridge across the Thames, which was commenced in 1760, and completed in 1770. It was the first work of the kind executed in Britain, in which arches approaching to the form of an ellipsis were substituted for semicircles, by means of which the roadway is brought much nearer to a level surface than in bridges constructed on the old plan. Mr Mylne was born in Edinburgh, in 1734, and, after receiving his education in his native city, travelled to Rome, where he resided five years; and where, in 1758, he gained the first prize of the academy of St Luke, in the first class of architecture. On returning to Britain, his plan for the contemplated Blackfriars bridge was preferred to all others, and he was employed to superintend that great public work. He also obtained the appointment of surveyor of St Paul's cathedral; and he it was who suggested the felicitous inscription on that building to the memory of Wren: —"Si monumentum quæras, circumspice" (If you inquire for his monument, look around). Among other buildings erected or altered by him, may be mentioned, Rochester cathedral, Greenwich hospital, King's Weston, Ardincaple house, and Inverary castle. He died in 1811.

MYOLOGY; the branch of anatomy relating to the muscles. See *Anatomy*.

MYOPIA. See *Short-sightedness*.

MYRIAD; ten thousand: in poetical language, it generally implies an innumerable multitude.

MYRIAPODA. This class of animals was first formed by doctor Leach, after having been placed in different orders by various naturalists before his time. Linnæus arranged them under the apterous insects, under the general names of Iulus and Scolopendra. Fabricius placed them in his class Mitosata; Latreille, Cuvier, and Dumeril, among the insects; and Lamarck, as a division of his class Arachnides.

In their general structure, organization, and in the situation and functions of their respiratory apparatus, the Myriapoda resemble insects. These consist of two air tubes, extending longitudinally and parallel to each other, the whole length of the body, which receive and transmit the air through the medium of numerous lateral spiracles. The animals of this class have a strong resemblance to serpents, their feet being closely approximated throughout the whole extent of their body. The mandibles are bi-articulated, and immediately followed by a quadrifid piece in the form of a lip with articulated divisions resembling little feet, which, from its position, corresponds to the ligula of the Crustacea; there are then two pairs of small feet resembling large hooks; they have two short antennæ, composed of seven joints in some, and, in others, they are numerous and setaceous; their eyes are composed of a union of ocelli, although some have a distinct cornea; the stigmata are very small, consisting of eighteen or twenty annuli; they have two dentated mandibles, fitted for bruising or cutting their food, and divided transversely by a suture, and a lip without palpi, formed of united portions.

The myriapoda live and increase in size longer than insects, as two years are required to render them adult. They are found under stones, the bark of trees, &c., and frequently burrow in the earth: their food consists of vegetable substances. They are generally known by the name of *Millipedes*.

ORDER I. CHILOGNATHA.

The antennæ are filiform, and composed of seven joints; the mouth is provided with two mandibles, and the lip is divided by sutures; two or four anterior feet, united at their base, like pedipalpi; and the spiracles are indistinct.

The body of the animals composing this order is frequently cylindrical, and its covering generally crustaceous; the feet are very short, they walk slowly, and are capable of rolling themselves up into a ball. The first segment of the body is longest, and every segment has usually two pairs of feet: the antennæ are thickest towards the point, or are filiform, very short and seven-jointed; the spiracles are either concealed or indistinct.

Family I. Anguiformia.

Body usually linear, covered with a solid skin, and without any anal appendages; antennæ thickest towards the end; never fewer than thirty-two feet.

Julus subulosus. Pl. 31. fig. 17. Body snake-shaped and cylindrical; antennæ, with the second joint longer than the third; legs numerous; there is no ridge or sharp edge on the sides of the rings.

Family II. Penicillata.

The body is oblong and membranaceous, very soft, with ridged scaly sides, and a pencil of ciliated scales at the posterior extremity; antennæ filiform, with twenty-four feet.

Polyxenus lagurus. Pl. 31. fig. 18. The antennæ are short, filiform, moniliform, and inserted under the anterior margin of the head; destitute of palpi; body soft, depressed, and with fasciculi of scales on the sides, and a pencil of ciliated scales at the posterior extremity; having twenty-four feet.

ORDER II. CHILOPODA.

The mouth is composed of two mandibles, with a small palpiform appendage, which appears as if it had been soldered in the middle, and terminating in a spoonlike process, with dentated edges; the lip is quadrifid, the two lateral divisions being the longest, and annulated transversely; body depressed, with a coriaceous, membranous, or flexible covering, and each segment provided with a pair of feet; antennæ setaceous, composed of numerous joints; spiracles distinct.

Family I. Inæquipedes.

Body elongated, but not worm-shaped or linear, divided below into fifteen segments, each provided with a pair of feet, and covered above with eight plates or half segments in the form of scutelli and concealing the spiracles; feet elongated, especially the last pair, with a very long and jointed tarsus; eyes large and compound.

Scutigera araneoides. Pl. 31. fig. 19. The antennæ are many-jointed and setaceous, and greatly longer than the head; mandibles two, with slender palpi adhering to the back of the internal lip; the posterior lip provided with two strong-pierced hooks; body elongated, linear; having thirty feet.

Family II. Æquipedes.

Body vermiform and linear, with the segments equal both above and below; feet equal, with the exception of the two last, which are long, and form a kind of tail; eyes granulated; spiracles lateral.

Lithobius forficatus. Pl. 31. fig. 20. The stigmata are lateral; the body divided into a similar number of segments, both above and beneath, each bearing a pair of feet; the superior plates alternately longer and shorter, and overlapping each other close to the extremity; fifteen pairs of feet.

Scolopendra morsitans. Pl. 31. fig. 21. The antennæ conico-setaceous, consisting of seventeen subconic joints; mouth covered by hemispheric galeæ; exterior palpi, with a double peduncle; mandibles strong and horny; the upper lip cleft; segments of the body margined; anterior pair of feet small, the last pair being largest; eight eyes, four on each side of the head, arranged in a rhomboidal form.

MYRIORAMA (Greek, *μυϱιας*, ten thousand, *ὀϱαμα*, view); a sort of landscape kaleidoscope recently invented by Brés, of Paris, and improved by Clark, of London. It is a movable picture, capable of forming an almost endless variety of picturesque scenes, by means of several fragments or sections of landscapes on cards, which may be placed together in numberless combinations. With sixteen cards 20,922,789,888,000 changes may be made.

MYRMIDONS; a people on the southern borders of Thessaly, who accompanied Achilles to the Trojan war. They received their name from Myrmidon, a son of Jupiter and Eurymedusa, or, according to some, from their having been originally ants, μυρμηκες. (See *Æacus*.) The term has received the signification of a bully, ruffian, or satellite of tyranny.

MYRON; a celebrated statuary of Greece, who was peculiarly happy in imitating nature. He made a cow so much resembling life, that even bulls were deceived, and approached her as if alive, as is mentioned by many epigrams in the *Anthologia*. He flourished about 442 years before Christ.

MYRRH; a fragrant, bitter, aromatic gum resin, which is obtained from an undetermined tree in Arabia, and especially in Abyssinia. It comes to us in grains having a resinous fracture, and a slightly acrid taste. According to Pelletier, it is composed of thirty-four parts of resin and sixty-six of gum. The Abyssinian myrrh is brought from the East Indies, and the Arabian comes by the way of Turkey. It is used in a great variety of medicinal preparations.

MYRRHA; a daughter of Cinyras, king of Cyprus. She became enamoured of her father, and introduced herself into his bed unknown. She had a son by him called *Adonis*. When Cinyras was apprized of the incest he had committed, he attempted to stab his daughter, and Myrrha fled into Arabia, where she was changed into a tree called *myrrh*.

MYRTLE; a genus of plants consisting of aromatic trees or shrubs, with simple opposite leaves, which are sprinkled with pellucid glandular points, and having axillary or terminal white or rose-coloured flowers. One species, the common myrtle, is a native of the south of Europe, and other countries bordering on the Mediterranean. It has been celebrated from remote antiquity on account of its fragrance and the beauty of its evergreen foliage, and, by different nations, was consecrated to various religious purposes. Myrtle wreaths adorned the brows of bloodless victors, and were the symbol of authority for magistrates at Athens. With the moderns, it has always been a favourite ornamental plant, and is commonly cultivated in gardens both in Europe and America. Pimento or allspice is the produce of a species of myrtle inhabiting tropical America, and consists of the berries, which are collected before they are ripe, and dried in the sun. No species of myrtle, nor, indeed, of the large family *myrtaceæ* inhabits any part of the United States.

MYRTLE WAX; a concrete oil, or vegetable wax, the product of the class of plants *myrica*, more commonly known by the name of *candleberry myrtle*. There are many plants which afford a concrete oil or wax; and even the light matter which is called the *down* of fruits, and which silvers the surface of prunes and other stone fruits, Proust has shown to be wax; but the indigenous family of *myrica* affords much the greatest abundance, and, in many respects, is entitled to the attention of cultivators. "The advantageous properties that this tree appears to possess," says M. Cadet, in the *Annales de Chimie*, tome 44, "ought to have induced philosophers to make inquiry to ascertain the various properties of the vegetable, and what attention its culture might require: it has long been considered merely as an object of curiosity." The plant abounds in nearly all parts of the United States of America, distinguished into four species: viz.—1. *Gale;* 2. *Cerifera;* 3. *Caroliniensis;* 4. *Pennsylvanica.* It varies in size from four to eighteen feet, becoming taller as it extends into the warmer regions. The bush or tree has somewhat the appearance of the common myrtle (*myrtus communis*), and bears a berry of the size of the pepper-grain or coriander-seed. These grains are of a common ash-colour, containing a small, round, hard kernel, which is covered with a shining wax, that may be obtained by boiling the grains in water. Toscan, in a memoir inserted in his work entitled *L'Ami de la Nature*, gives a full account of the manner of procuring the berries, and preparing the wax. The plant itself has always been esteemed a great ornament, and much exertion and expense have been bestowed to promote its growth in the European gardens. The wax is prepared for commerce by the poor people along the northern lakes and might, by proper attention, be rendered an important article of traffic. So much was the product of the plant valued by the king of Prussia, that the tapers made of it were reserved entirely for the sick-room of the royal household, it emitting, when burning, the most delicious and balsamic odour. It was noticed, as early as the year 1722, in a memoir of M. Alexandre, published in the History of the Academy of Sciences. Charles Louis Cadet has given an excellent account of the natural history, &c., in the *Ann. de Chimie*, already referred to; and doctor John Bostock has furnished a chemical analysis of its properties and habitudes, in Nicholson's Journal, vol. iv. It has recently been introduced to the notice of the medical public, as possessing anti-dysenteric properties, by William M. Fahnestock, M. D. See *American Journal of the Medical Sciences* (vol. ii. 1828.)

MYSIA; a country of Asia Minor, which, in the most extensive sense, comprehended all the north-western portion of the peninsula, and bordered on the Ægean, the Propontis, Bithynia, and Lydia. The coast was inhabited by Æolian Greeks, the interior by different tribes. Lampsacus, Cyzicus, and Pergamus were the principal cities.

MYSORE, or MAISOOR; a principality of South India, chiefly between lat. 11° and 15° N., surrounded by the British territories subject to the presidency of Madras; about 210 miles long, and 140 broad; population in 1804, 2,171,754; families, 482,612; Mohammedan families, 17,000; Bramin families, 25,370; Lingait families, 72,627; Jain families, 2063. It consists of high table-land, elevated about 3000 feet above the level of the sea, from which rise a number of lofty hills, containing the sources of many rivers, the principal of which are the Cauvery, Toombuddra, Vedawati, Bradri, and Penar. The climate, on account of the elevation of the country, is temperate. The soil produces all the grains and vegetables of the other parts of India, and many of the fruits of Europe. The rajah is tributary to the British. The first rajah mentioned in history is Cham Raj, who began to reign in 1507. But the territories of Mysore received their most important accessions from the victories of Hyder Ali, in the middle of the eighteenth century, who, without assuming the title, exercised all the power of sovereignty. His son Tippoo Saib (q. v.) perished in defending his capital in 1799, after an unsuccessful struggle with the British, who placed a descendant of the ancient rajahs on the throne. See *East India Companies*.

MYSTAGOGUE, in the mysteries of antiquity; he who introduced the person to be initiated, also he who showed the interior of the temple. Hence *mystagogue* has been used, in modern times, for a person who pretends to deal in mysteries.

MYSTERIES were, among the Greeks, and afterwards, also, among the Romans, secret religious assemblies, which no uninitiated person was permitted to approach. They originated at a very early period. They were designed to interpret those mythological fables and religious rites, the true meaning of which it was thought expedient to conceal from the people. They were perhaps necessary in those times, in which the superstitions, the errors, and the prejudices of the people could not be openly exposed without danger to the public peace. Upon this ground they were tolerated and protected by the state. Their first and fundamental law was a profound secrecy. In all mysteries there were dramatic exhibitions, relating to the exploits of the deities, in whose honour they were celebrated. The most important Greek mysteries were, 1. the Eleusinian (described in the article *Eleusis*). 2. The Samothracian, which originated in Crete and Phrygia, and were celebrated in the former country in honour of Jupiter. From these countries they were introduced among the Thracians or Pelasgians in the island of Samothrace, and extended from thence into Greece. They were celebrated sometimes in honour of Jupiter, sometimes of Bacchus, and sometimes of Ceres. (For further information respecting the Samothracian mysteries, see *Cabiri.*) 3. The Dionysia, which were brought from Thrace to Thebes, and were very similar to the former. They were celebrated every second year. The transition of men from barbarism to civilization was likewise represented in them. The women were clothed in skins of beasts. With a spear (*thyrsus*) bound with ivy in their hands, they ascended mount Cithæron, where, after the religious ceremonies, wild dances were performed, which ended with the dispersion of the priestesses and the initiated in the neighbouring woods. They had also symbols, chiefly relating to Bacchus, who was the hero of these mysteries. These celebrations were forbidden in Thebes, even in the time of Epaminondas, and afterwards in all Greece, as prejudicial to the public peace and morals. 4. The Orphic, chiefly deserving mention as the probable foundation of the Eleusinian. 5. The mysteries of Isis (q. v.) were not in vogue in Greece, but were very popular in Italy, particularly in Rome. An excellent work upon mysteries is St Croix's *Recherches historiques et critiques sur les Mystères du Paganisme* (second edition, revised by Sylv. de Sacy, Paris, 1817, 2 vols.).

MYSTERIES, or more properly MIRACLES; a kind of rude drama, which was a favourite spectacle in the middle ages, represented at solemn festivals. The subjects were of a religious character, and the ecclesiastics were at first the performers and authors. They were called *mysteries* and *miracles*, because they taught the mysterious doctrines of Christianity, and represented the miracles of the first founders of the faith, of the saints and martyrs. (See *France, Literature of,* division *Dramatic Poetry.*) The first play of this sort, specified by name, appears to have been St Catharine, written, according to Matthew Paris, by Geoffrey, a Norman, about 1110. They sometimes lasted several days. Thus we hear of one which lasted eight days, and contained the greater part of the scripture history. The Corpus Christi, the famous Coventry mystery, begins with the creation, and ends with the judgment day. The passion of Christ, the slaughter of the innocents (in Hawkins's *Origin of the English Drama*), &c., are among the subjects represented. The *Mysteries* were superseded by the *Moralities* (q. v.).

MYTHOLOGY (from *μυθος*, tradition, tale, fable, and *λογος*). The mythology of a nation is the whole body of its traditions respecting its gods, or fabulous heroes. The mythology of the Greeks and Romans is most commonly indicated by this word, because, for a long time, it was almost the only one investigated; but, of late, attention has also been bestowed on the mythologies of other nations, as of the Hindoos, the northern tribes of early Europe, &c. Whether mythological fables are to be considered mainly as the invention of crafty priests, or allegorical expositions of truth, or gross conceptions of divine things formed by the ignorant, or as founded on historical facts, which have been varied and exaggerated by tradition, embellished by poetry, and purposely altered by cunning, they still retain their interest for the historian, to whom it is equally important to study the wide aberrations of mankind in the search for truth, as their successful attempts to attain it. Erroneous notions, which influence the belief and conduct of men for centuries, must have some broad foundation in human nature, and afford the means of tracing the progress of its gradual development. The errors of mythology have their counterpart in politics and science; and we should no more think of rejecting it, as unworthy of study, on account of its absurdities, than we should of turning from the study of the feudal system, because of its glaring inconsistency with the true principles of government. If we wish to arrive at truth, we must investigate the causes of error.

In the article *Metamorphosis,* we have spoken of the constant wish of man to explain what surrounds him, to find causes for effects. This wish, deeply implanted in our soul to raise us above brutes, and make us intelligent beings, united with the natural disposition, or, rather, necessity of all nations, in the early stages of their history, to speak symbolically; their ignorance of the causes of natural phenomena; the ever-varying reports of tradition; the peculiar fondness of some tribes for poetical embellishments; the selfish purposes to which some individuals will always turn the credulity of their brethren; but, above all, the necessity of the human heart to acknowledge and adore a supernatural power (the conception of which must be accommodated to the state of cultivation)—these causes sufficiently explain the origin of mythologies, particularly if we take into account the blending together of the traditions of different tribes, by means of migrations, &c. Independently of the illustrations which they afford of the state of morality and religion at given periods, the various mythologies are interesting on account of the historical facts which they frequently contain, though disguised by tradition, or the conclusions to which they lead, as to the connexion of different nations, at certain periods, or the contrary. As to Greek mythology, investigations have been carried on, of late, with greater zeal in Germany than in any other country; and two very distinct theories respecting it have found adherents. Creuzer, standing at the head of one party, understands by the word *mythology* "the symbolical religious poetry of the whole ancient world, which, being founded partly on a common language which nature suggests to all, partly derived from a common source, forms one inseparable whole." Godfrey Hermann, another eminent German philologist, however, considers mythology as the science that teaches what notions were the basis of particular symbols in a particular nation. In the article *Creuzer*, a somewhat fuller account of his view of mythology is given. Hermann's view is contained in his letter to Creuzer, on the Nature and Treatment of Mythology (Leipsic, 1819), which was preceded by the Letters on Homer and Hesiod, especially on the Theogony (Heidelberg, 1818). A critical analysis only can enable us to understand the nature, origin, and connexion of the mythological fables. The nature of the subject itself must determine how it is to be treated; that is to say, how the true meaning is to be found out from symbolical expressions, or distorted representations.

Greek mythology, and so that of every other nation, is a mass of various elements, though kindred in their origin, yet not forming a system. The sources of mythology are the notions which sprung up among the people, the dogmas of the priests, and the representations of those who treated of mythological subjects, without having been initiated into the religious mysteries. These three chief sources of mythology give rise to three chief periods, each requiring a peculiar treatment. The early national mythology of the Greeks is to be explained etymologico-allegorically; the doctrine of the priests, in an historico-dogmatical way; and the exoteric theory of the poets and philosophers, in a critical way. It belongs to a history of mythology to show how the cyclus of mythuses was formed by poets; how it was explained by the ancient writers on cosmogony and theogony; how it was used arbitrarily by the lyrical and tragic poets; and how it stands in close connexion with ancient history. Many treatises exist, affording rich materials for such a work. The period of the independent development of mythological fables was followed by that of the Alexandrian collectors of mythuses; and these were succeeded by sophists and rhetoricians, who tried, with little success, to solve the riddles of mythology. The polemic zeal of the fathers of the church was of greater service, and to their computations we owe the preservation of interesting mythuses. Though the labours of some scholars, previous to the time of Heyne, must be acknowledged to have thrown light on this subject, yet he deserves the honour of having first attempted, on just principles, the investigation of the meaning of the various traditions. Since Heyne and Voss, the native land of the different mythuses has been carefully investigated, and has been found in the East, where, of course, new obstacles arose; and the attempts of Kanne, Wagner, Gorres, Dornedden, Hug, Sickler, to ascertain the native soil of the mythological traditions, sometimes betray a want of accuracy and circumspection. Thus, by degrees, that theory was developed which Creuzer, in his Symbolics and Mythology, strives to establish, and which, through the great erudition and acuteness of the author, has found many adherents, viz. "that mythology is a great panorama of religious ideas and conceptions, mostly originating in the East, and conceived and developed in the Oriental fashion, from which, therefore, the symbolic, magic, and allegoric cannot be excluded, any more than from the most ancient Greek poetry." Many maintain that the whole Greek mythology leads strongly to the supposition of the pre-existence of pure monotheism. Hermann, as we have said, opposed this view, and John H. Voss and Lobek warmly attacked it; but Gorres, Von Hammer, Munter, Uwaroff, and Ritter have attempted to give new reasons for its support. For information respecting the mythology of India, and of the north of Europe, see *Indian Mythology*, and *Northern Mythology*.

MYTHOLOGY, Egyptian. See *Hieroglyphics*.

MYTHOLOGY, Northern. See *Northern Mythology*.

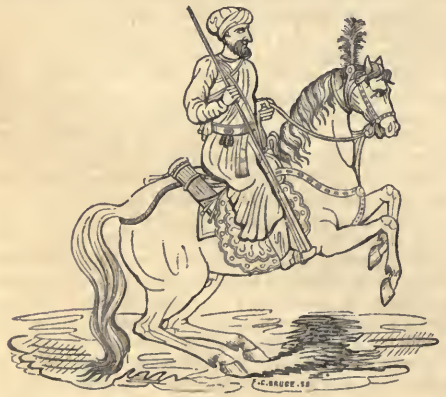
MYTILENE, or MITYLENE. See *Lesbos*.

N

N; the fourteenth letter and eleventh consonant of the English alphabet; an articulation formed by placing the point of the tongue against the root of the upper teeth, and forcing out the breath. It is a liquid or semi-vowel, because part of its articulation may be continued for any length of time. It is a nasal letter, the articulation being accompanied by a sound through the nose, caused by the position of the tongue, which forces part of the air in the expiration through that organ. It is a lingual, because produced chiefly by the above-mentioned position of the tongue, which, as the reader will see from the article *L*, is nearly the same in the pronunciation of both these letters; in consequence of which persons, who, from neglect, or natural defect, are unable to inflect the tongue, so as to pronounce *l*, often substitute an *n* instead of it. N has always something of a nasal sound, and in many languages is the strongest nasal sound; for instance, before the palatic sounds *g* and *k*, as in *finger, tinker, ring;* in French and Portuguese, after a vowel in the same syllable, as *on, un*, &c. For the etymologist *n* is important, on account of its ready union with other letters, and its frequent omission or insertion between other letters. The same word in the same language often has the *n*, in some of its modifications, before the palatic sounds *g* and *k*, and in others omits it. Thus the original *frago*, *tago*, *pago*, became in later Latin *frango*, *tango*, *pango*, yet *fregi*, *fractum*, *tetigi*, *tactum*, *pepigi, pactum*, &c., were retained. Thus also *fingere* and *figura, fictus, figmentum; stringere, strictus.* From the Latin *lynx*, the German forms *luchs* (the Danes *los*, the Swedes *lo*); for the German *danken* (to thank) and the Swedish *danka*, the Icelandic has *tacka:* for the Greek μεγας, the Romans had *magnus.* In the same way the Latin ending *cus* passes over into *gnus*, as *benignus*, *malignus*, *abiegnus*, &c. It often associates also with the labials *d* and *t*, while other idioms omit it in the corresponding words; thus in Latin, *scindo, scidi; findere, fidi.* In German, the *n* before *d* is extremely frequent, thus *jugend* (youth); in Low Saxon, *jögd* only; *tugend* (virtue), for the ancient *taugde; nackend* (naked) for the old *nacket;* and in *lěbendig*, *wesentlich*, *ordentlich*, and a large number of other words. On the other hand, the Icelandic has for *mantel* (mantle) *mattul*, for *hand* (Swedish *handa*) only *hatt;* for *land*, only *lad*, &c. From *insula* also comes the Italian *isola*. The difficulty of passing quickly from the pronunciation of *n* to that of *m*, leads, in many languages, to a change of *n* before *m* into an *m;* thus the Latin *con*, *in*, the Greek εν and συν, the German *en*, are changed into *com*, *im*, &c., as *committere*, *impar*, the German *empor*, *empfangen*, *empfinden*, &c. Some languages put an aspirate before *n*, which in this case was probably pronounced with a strong breathing through the nose. Thus we find that for the German *nacken* (neck) the Anglo-Saxons had *hnecca;* for *neigen*, *hnigan;* for *napf*, *hnaeppe*. Palatic sounds were put before the *n* to strengthen it: thus the Germans made the Latin *nodus*, *knoten*, &c.: even the sibilant sound *s* was used to strengthen it, as the German *schnee* for *neu* (still used by hunters), from *nix*, &c. By the Germans in modern Latin, N N. is used to indicate a proper name which the writer does not know or does not choose to give; and, according to Du Fresne, this sign originated about the eleventh century, from the abbreviated *ille* or *illa*, which was written Ill, with a dash through it, which at a later period was taken for two *N's*. It is certain that ILL appears in the formularies of Marculphus, and other writings before the eleventh century. We often find *n* omitted by the Greeks and by the Romans, when not final; thus Cicero writes *Foresia*, *Megalesia*, for *Forensia*, *Megalensia*. On inscriptions we find IMPESA for IMPENSA, and MESIBUS for MENSIBUS. In Plautus we find *stas* for *stans*. N, as a numeral, signified 90, or, according to Baronius, 900; with a dash over it, it signified 90,000. With the Greeks, ν stood for 50. As an abbreviation, N signifies *noster*, and on medals of the Lower Empire, D. N. signifies *Dominus noster;* it often also signified *υἱος*, *novus*, *nepos*, *nobilis*. In geography, it stands for *north*. On French coins, it means the mint of Montpellier. The Spanish alphabet has a character *ñ*, called *n* with the *tilde*, and pronounced like *ni* in *onion*, *minion*; for instance, *España*, *Nuñez*, *niñez*.

NABIS, a Spartan king, who lived about B. C. 200, was a tyrant, who at first assumed the appearance of a just prince, but afterwards imitated, externally, the Asiatic despots. He was surrounded by an armed guard, and had a multitude of secret spies in his service. Every suspected person was immediately put to death or banished. He plundered Messina and Argos, and would have continued to extend his dominion still wider over Peloponnesus by artifice and force, had not the Romans, in alliance with the Achæans, declared war against him. Quintus Flaminius was not able to conquer him; but Philopœmen, with the army of the Achæan league, was more successful. The tyrant was at last killed in Sparta, by his own allies, the Ætolians, whom he had called into his assistance.

NABOB (a corruption of *navab*, the plural of *naib*, a deputy); in India, the title of a governor of a province or the commander of the troops; borne, however, by many persons as a mere titular appendage. The costume and trappings of a nabob are represented below. The nabobs were subordinate to the *subadars*, or governors of a great extent of country (a *subah*). After the invasion of Nadir Schah, they made themselves independent of the Great Mogul, but only to fall under the more grinding domination of the British. The term has become proverbial, in English, to signify a person who has acquired great wealth in Hindostan, or lives with peculiar splendour.



NABONASSAR; a king of Babylon, with whose reign begins an epoch, called the *era of Nabonassar*, 747 or 746 B. C. See *Epoch*.

NACRE, or MOTHER OF PEARL, is the inner part of the shell of the pearl muscle. This is of a brilliant and beautifully white colour, and is usually separated from the external part by aqua-fortis, or the lapidary's mill. Pearl muscle shells are on this account an important article of traffic to China and many parts of India, as well as to the different countries of Europe. They are manufactured into beads, snuff-boxes, buttons, and spoons, fish, and counters for card-playing, and innumerable other articles. The pearl muscles are not considered good as food; though, after having been dried in the sun, they are sometimes eaten by the lower classes of people in the countries near which they are found.

NADIR, in astronomy; that point of the heavens which is diametrically opposite to the zenith, or point directly over our heads. The zenith and nadir are the two poles of the horizon.

NADIR SCHAH, or THAMAS KOULI KHAN, king of Persia, a famous conqueror and usurper, was born at Calot, in the province of Khorasan, in 1686. His father was governor of a fortress on the borders of Tartary, to which office he succeeded in his minority, under the guardianship of an uncle who engrossed all the authority. He was subsequently kidnapped by the Usbecks, but escaped, after a detention of four years; and, in 1714, entered into the service of the beglerbeg of Muschadi, in Khorasan, where he so much distinguished himself by his bravery, that he was intrusted with the command of a thousand cavalry, and was soon after placed at the head of an army, with which he gained a great victory over the Usbeck Tartars. This achievement excited so much jealousy in the beglerbeg, that he gave the command to another person, and, when Nadir remonstrated, ordered him to be bastinadoed. Irritated by this disgrace, he joined a band of robbers, and with this troop ravaged all the country, and, surprising Calot, put his uncle to death, although he had been previously negotiating with him, to enter the service of schah Thamas, king of Persia, then exceedingly pressed by the Turks and Afghans. Such was the bad posture of his affairs, that the schah felt himself impelled to overlook this villany, and take Nadir into his service, who repulsed both his enemies, and was honoured with the title of *Thamas Kouli Khan*. The schah, during his absence, having in person sustained a defeat from the Turks, was induced to make peace with them, and Nadir was directed to disband his army of 70,000 men. Instead of obeying, he immediately led them to Ispahan, where he seized the schah, confined and deposed him, and proclaiming his son Abbas, then an infant, in his stead, assumed the title of regent. He forthwith renewed the war with the Turks, and recovered all the lost provinces; and the young king dying in 1736, he was raised to the sovereignty. This elevation only extended his views; and, being invited, by some conspirators about the person of the Great Mogul (see *Mongols*), to undertake the conquest of India, he began his march at the head of 120 000 men, and, with little resistance, reached Delhi, March 7, 1738. The riches which he found in this capital were immense; but, being exasperated by some tumults on the part of the inhabitants, he caused a general massacre, in which upwards of 100,000 persons perished. After this barbarity, the sanguinary victor concluded a peace with the Mogul, whose daughter he married, receiving with her, as a dowry, some of the finest provinces of the empire that were contiguous to Persia. In this expedition, it is supposed that he carried away, and distributed among his officers, valuables to the amount of £112,000,000. On his return, he levied war against the Usbecks and others; but had nearly lost his life by an assassin, instigated by his own son. In 1745, he defeated the Turks at Erivan. A conspiracy having been formed against him by the commander of his body-guard, and his own nephew, he was assassinated in his tent, June 8, 1747; his nephew, Ali Kouli, succeeding to the throne. This extraordinary usurper was of a tall stature and robust form, with handsome and expressive features. His conduct sufficiently marks his cruelty, ambition, and rapacity. His most favourable feature appears to have been a disposition to religious toleration. On his accession to the throne, he required certain curses pronounced annually on the caliphs preceding Ali, and other incentives to religious strife, to be dispensed with; which being objected to by the head of the clergy, he had him bow-strung.

NÆNIA (*Latin*); a funeral song, among the ancients, sung generally by women, at interments. As they were composed by the persons who sung them, and were rather unmeaning, the word came to signify any trifling, unmeaning song. *Nænia* was also the goddess of lamentation, who was invoked at the funerals of the aged, and had a temple before the Viminal Gate.

NÆVIUS, Cneius, one of the most celebrated among the earliest Roman poets, was born in Campania, and wrote tragedies and comedies after the model of the Greek. He also wrote an epic poem upon the Punic war, and another in imitation of the Cyprian Ilias. He lived in the first half of the sixth century after the building of Rome. By the introduction of some of the Roman nobility into his comedies, he provoked their anger, was banished from the city, and retired to Utica. Fragments only of his works have come down to us.

NAGASAKI, or NANGASACKI; a seaport of Japan, on the south-west coast of Ximo, situated at the end of a commodious bay; lon. 129° 45′ E.; lat. 32° 44′ N. It is a large commercial town, the only place where Europeans are permitted to trade, a privilege now confined to the Dutch. The Dutch town is built on the island of Desima, 600 feet long, and 120 broad, adjoining Nagasaki, and contains several large storehouses. The harbour is three miles long, and one broad. The Japanese town is divided into the inner and outward town; the former of which contains twenty-six, and the latter sixty-one streets, in none of which strangers are suffered to dwell; they have particular suburbs allotted to them, where they are narrowly watched by the emperor's officers. The chief public buildings are five *janaguras*, or large houses, of timber, where are kept three imperial *junks*, or men-of-war, ready to be launched at command; the palaces of the two residing governors, and other princes and grandees of the first and second rank; about sixty-two temples, within and without the city; most of them built on eminences, and serving not only for devotion, but also for recreation; the common prison, standing near the middle of the town, and consisting of about one hundred huts, or cages, separated from each other. The houses are low and mean; the inhabitants are mostly merchants, tradesmen, shopkeepers, and handicraftsmen. See *Japan*.

NAHANT is the Indian name of a peninsula, which extends into the sea from the township of Lynn, Massachusetts, nine miles south of Salem, and fourteen north-east from Boston. It is divided into Great Nahant, Little Nahant, and Bass Neck. The isthmus leading from the main land to Little Nahant is a mile and a half long, and very narrow. Passing over this small peninsula, another delightful beach, ninety rods long, connects it with Great Nahant. These beaches are very hard and smooth, and are of sufficient width, at low water, to accommodate thousands with a delightful walk or ride. Great Nahant contains 305 acres of land. The shores of this peninsula are bold and rocky. When an easterly wind drives the sea into the bay, the dashing of the waves against these shores presents a scene of great sublimity. During the most sultry part of summer, there is usually a refreshing breeze at Nahant, which renders it a place of great resort for those who seek for health or pleasure.

NAHL, Johann August, a sculptor, born 1710, at Berlin, and educated there under the celebrated Schluter. After having made a tour through France and Italy, he returned to Berlin in 1741, where, and likewise at Potsdam, Sanssouci, and Charlottenburg, many of his works are to be seen. In 1746, he went to Switzerland, and passed nine years in that country, principally at Berne. In 1755, Nahl was created professor in the academy of arts in Cassel, and there executed the admirable colossal statue of the landgrave Frederic, which stands in Frederic's square. He died in Cassel, 1781.

NAHUM; one of the twelve minor prophets, whose prophecies relate to the destruction of Nineveh, which he describes in vivid colours. His object, according to some late German writers, seems to be to represent to his nation, groaning under the oppression which they had suffered from the Assyrians, the total destruction of the haughty capital, as a just punishment of Jehovah. The period in which he lived is, however, uncertain, some placing it before, and some contemporary with that event.

NAIADS (from the Greek *ναιω*, to inhabit, or *ναω*, to swim), in the Greek mythology; nymphs of fountains and brooks. The notions and tales of the ancients concerning the Naiads resemble, in some points, those which the northern mythology gives us of the Nixies. The Naiads are represented as beautiful women, with their heads crowned with rushes, and reclining against an urn, from which water is flowing.

NAIL-MAKING. Nails are made both by hand and by machinery. *Wrought nails* are made singly at the forge and anvil, by workmen who acquire, from practice, great dispatch in the operation. Machines have been made for making these nails perfectly, and with rapidity; yet they have not come into general use, owing to the cheapness of the product by manual labour. *Cut nails* are chiefly made by machinery invented in the United States of America. The iron, after having been rolled and slit into rods, is flattened into plates of the thickness intended for the nails, by a second rolling. The end of this plate is then presented to the nail machine, by a workman, who turns the plate over once for every nail. The machine has a rapid reciprocating motion, and cuts off, at every stroke, a wedge-shaped piece of iron, constituting a nail without a head. This is immediately caught near its largest end, and compressed between *gripes*. At the same time, a strong force is applied to a die at the extremity, which spreads the iron sufficiently to form a head to the nail. Some nails are made of cast iron, but these are always brittle, unless afterwards converted into malleable iron by the requisite process.

NAIN; a village eight miles from Nazareth, forty-two from Jerusalem, at the foot of mount Hermon, celebrated as the place where Christ restored a dead man to life.

NAIRN; a small county in the north-eastern part of Scotland, formerly included in Morayshire, by which it is bounded on the east and south; on the north, it borders on the Moray Firth, and on the west it joins Inverness-shire. It is from sixteen to twenty miles in length, and from ten to twelve in breadth. The river Nairn, descending from the hills of Inverness, and flowing towards the north-east through a fertile valley, falls into the firth at the county town, to which it gives its name. The Findhorn intersects the southern part of the county, which consists chiefly of high moorland. Population of the county in 1831, 9,354.

NAIVETE; a French word, which has become naturalized in several other languages; for instance, in the English. The word is of Latin origin, derived from *nativus* (natural, something possessed from nature); in low Latin, *naivus*. The French *Dictionnaire de l'Académie* gives the following definition of *naïf:—naturel, sans fard, sans artifice*, also *qui représente bien la vérité, qui imite bien la vérité*, and of a person, *qui dit sa pensée ingénument et sans détour*. Sometimes it is used in dispraise, and then means, *qui est trop ingénu dans sa simplicité*. It could easily be imagined, that a word of such a description, received into a foreign language, would be used in no very distinct and precise meaning. The essential meaning of the word is a natural, unreserved expression of sentiments and thoughts, without regard to conventional rules, and without weighing the construction which may be put upon the language or conduct. Thus it is intimately connected with what the ancients called *charis* (*gratia*), as Ramdohr, in his work *Charis*, has shown. *Naïveté*, therefore, can appear such only to a person accustomed to the practice of conventional proprieties. *Naïveté* generally implies inexperience of the world; hence it is not unfrequently taken for want of judgment. It implies simplicity of heart, unimpaired by the chilling experiences of life, and unfettered by the capricious regulations of society, trusting with childlike confidence, as it has no disposition to cunning or guile. Schiller says *naïveté* unites childlike with childish simplicity; and the latter ingredient awakens in the observer the smile of superiority. But as soon as we have reason to believe that the childish simplicity is more truly childlike, proceeding from a heart full of innocence and truth, and a greatness of soul which disdains concealment and artifice, then the smile of self-complacency vanishes, and is succeeded by admiration of the ingenuousness presented to us. The term is sometimes applied to works of literature or the fine arts; for instance, to poetry, which expresses natural feeling in a simple manner; particularly to that of the earlier ages or lower orders of society; or to music, which, without studied correctness, speaks directly to the heart. No affectation is so offensive as affected *naïveté*, because it bears the stamp of hypocrisy and deceit on its forehead; and yet how often is it met with in modern society!

NALDI, SEBASTIANO; a celebrated Italian buffo singer, who visited London in the early part of the present century. Naldi met his death in Paris, in 1819, by the explosion of an apparatus which had been invented for cooking by steam.

NAMES. These are, 1. given or baptismal names (see Dolz's work upon Baptismal Names, Leipsic, 1814); 2. family names, which are added as an hereditary distinction to the proper or baptismal names. The Greeks, with the exception of a few families at Athens and Sparta, had no family names. Among the Romans, each person had commonly three names —a proper name (*prænomen*, the distinction of the individual), the name of the clan (*nomen*), and the family name (*cognomen*). Sometimes, also, a surname was added, which was borrowed from some distinguished exploit or remarkable event. The *prænomen* was placed first, and commonly written with one or two letters; for example, A., Aulus; C., Caius; L., Lucius; M., Marcus; P., Publius; Q., Quintus; T., Titus; Ap., Appius; Cn., Cneius; Sex., Sextus, &c. Then followed the *nomen*; for example, Cornelius, Fabius, Julius (from the clan (*gens*), Cornelian, Fabian, Julian). Lastly came the *cognomen*; for example, Cicero, Cæsar, Scipio, and others. In the name M. Tullius Cicero, M. is the *prænomen*, which distinguishes him from his brother, Quintus; Tullius, the *nomen*, which distinguishes the clan (*gens*); and Cicero the *cognomen*, which shows his family. Instances of surnames (*agnomen*) are *Africanus* (see *Scipio*) and the like. In Germany, and other kindred nations, family names were little used by commoners before the fourteenth century. Every one had a baptismal name only. The most ancient method of distinguishing different individuals of the same name consisted in adding their father's name to their own; hence originated many English, Danish, and German names, which end in *son, sohn, sen*; for example, *Johnson, Williamson, Thorwaldson, Wilmsen* (that is *Williamsson*). To this class belong, without doubt, also, those proper names ending in *i* (the termination of the Latin genitive), which frequently occur as names of a clan, such as *Augusti* (*Augusti filius*). In a similar manner originated the Spanish names ending in *ez*, such as *Fernandez, Rodriguez*; that is to say, Ferdinand's, Rodrigo's son. (See the articles *Mac*, and *Fitz*.) The Arabians call no one by his own or proper name. Suppose some one whose father is named *Hali*, and whose own name is *Zoar*; he would be called *Ebn Hali* (Hali's son), and his son *Ebn Zoar*. With feudalism, new names were introduced, derived from the districts conferred on the nobles, or from the feudal relations. The nobility had, everywhere, family names long before the commoners. Another class of family names among commoners was derived from their occupations or the places of their birth; for example, *Smith, Miller, Fisher, French, Welsh, Dutch*, &c., or from the signs which tradesmen put up before their shops, such as *King, Duke*. Sometimes striking external peculiarities have given origin to names, which have descended to the posterity of those on whom they were bestowed, such as *Brown, Long, Broadhead*. In Germany, family names first came into general use among commoners in the seventeenth century. See Wiarda's *Ueber Deutsche Vor und Geschlechtsnamen* (Berlin, 1800), Euséb. Salverte's *Essai Historique et Philosophique sur les Noms d'Hommes, de Peuples et de Lieux, considérés principalement dans leurs Rapports avec la Civilisation* (Paris, 1824, 2 vols.).

NAMUR; lately a province of the kingdom of the Netherlands, since 1831 belonging to Belgium. It is composed of the greatest part of the county of Namur, of a part of the principality of Liege, and some parts of the duchy of Brabant and French Hainault; within these limits, constituted in 1814, it contains 156,400 inhabitants, on a superficial area of 1380 square miles. The soil is remarkably rich; the face of the country is a plain, interrupted by low hills, which are covered with woods. Besides the products of tillage and grazing, which is extensively carried on, iron, copper, lead, marble, and coal are found. The county of Namur was sold by the last count to Philip the Good, duke of Burgundy, in 1421. By the marriage of Maximilian with Mary of Burgundy (1477), it passed, with the other Belgic provinces, to the house of Austria; by the peace of Luneville, it was ceded to France, and formed a part of the French empire till 1814, when it was annexed to the new kingdom of the Netherlands. See *Netherlands*.

NAMUR; the capital of the Belgic province of the same name, and an Episcopal see, situated at the confluence of the Sambre with the Meuse; lat. 50° 28′ N.; lon. 4° 21′ E.; twenty-eight miles from Brussels; 116 from Amsterdam. The fortifications, which were destroyed by Joseph II. (1784), have been restored, and, since 1817, considerably enlarged; it has also a citadel on a steep rock. The cathedral is the principal public edifice: there are sixteen other churches, several hospitals, &c.; population, 16,150. Cutlery and other iron wares, glass, leather, tobacco, are the principal articles of manufacture. Namur has been often taken in the wars between France, Holland, and Austria, and has been several times inundated.

NANCY; a city of France, formerly the capital of the duchy of Lorraine, now the chief place of the department of the Meurthe; a bishop's see; lat. 48° 42′ N.; lon. 6° 10′ E.; population, 29,122. The natural situation of the city, in a pleasant plain, near the left bank of the Meurthe, is agreeable, and the buildings are handsome. The embellishments of the place are principally owing to Stanislaus, king of Poland, who resided here. The old town is dark and irregularly built, but the new town is regularly laid out, and contains handsome streets, with splendid buildings and delightful public walks. The royal square, from which a triumphal gate leads into Carrière square, containing a promenade, terminated by the government palace, and two beautiful gates, leading into the old town, and the Pepinière, a charming walk, is particularly distinguished. Alliance square has its name from two pillars erected, in 1759, commemorative of the alliance concluded between France and Austria. Among the churches, the cathedral, and the Franciscan church, with its rotunda, are the most deserving of attention; the latter contains the tomb of Charles the Bold, duke of Burgundy, who fell under the walls of Nancy, in 1477. There are also an academy, a public library of 23,000 volumes, a lyceum, a society of arts and sciences, a cabinet of natural philosophy, a botanical garden, and numerous other literary and charitable institutions. Woollen and cotton goods and paper hangings are the principal articles of manufacture. Louis XIV. took possession of Nancy in 1661, and caused the fortifications to be demolished.

NANGASACKI. See *Nagasaki.*

NANI, John Baptist Felix Gaspar, a Venetian historian, was born at Venice, in 1616, and educated with care. In 1638, he accompanied his father to Rome, whither the latter was sent as ambassador. In 1643, he himself was sent as ambassador of the republic to France. His mission lasted twenty-five years, during which he enjoyed the confidence of cardinal Mazarin. He was appointed historiographer and keeper of the archives of the republic. He resided three years as ambassador at Vienna. From Louis XIV., he obtained back Candia. He was also made procurator of St Mark, the highest dignity after that of doge, and was one of the commissioners who compiled the *Legum Venetarum compilatarum Methodus* (1678, 4to). He died in the year 1678. He left a relation of his second mission in France, and a report on the condition and resources of Germany; but his great work is *Istoria della Republica Veneta*, the first part of which was published in 1676 (4to), the second, after the author's death. It forms the eighth and ninth volume of the Collection of Venetian Historians (1720, 4to). Nani begins his work with the year 1613. It is praised for the political sagacity which it exhibits, but the style is censured.

NANKEEN, or NANKING; a sort of cotton cloth, which takes its name from the city of Nanking, where it was originally manufactured. It is now imitated in most other countries where cotton goods are woven; but those of the East are superior, on account of the natural colour of the cotton (*gossypium religiosum*) being reddish, while, in those countries where white cotton is used, it is necessary to give it the proper hue by artificial means.

NAN-KING, or NANKIN, or KIANG-NING: a city of China, capital of Kiang-nan, 500 miles south-east of Peking; lon. 118° 47′ E.; lat. 32° 5′ N.: the amount of the population is uncertain; it has been computed at one, two, and even three millions. Nanking surpasses in extent all the other cities of China. We are assured that its walls are sixteen miles in circumference. This city is situated at the distance of three miles from the river Yangtse-kiang. It is of an irregular figure, the mountains which are within its circumference having prevented its being built on a regular plan. It was formerly the imperial city; for this reason it was called *Nan-king*, which signifies the *southern court;* but since the six grand tribunals were transferred to Pe-king, it has been called *Kiang-ning*, in all the public acts. Nanking has lost much of its ancient splendour. It had formerly a magnificent palace, no vestige of which is now to be seen; an observatory, at present neglected; temples, tombs of the emperors, and other superb monuments, of which nothing remains but the remembrance. A third of the city is deserted, but the rest is well inhabited. Some quarters of it are extremely populous, and full of business. It is still the first city in China with regard to manufactures. The staple one is silk, also the cotton stuffs that bear its name; beautiful paper and printing. It is also the most learned city in the empire, and produces the greatest number of doctors, and has the best furnished booksellers' shops. The streets are not so broad as those of Pe-king; they are, however, very beautiful, well paved, and bordered with rich shops. Here are no public edifices corresponding to the reputation of so celebrated a city, except its gates, which are beautiful, and some temples, among which is the famous porcelain tower—a pagoda of octagonal form, 200 feet high, and divided into nine stories, by plain boards within and without, by cornices and small projections covered with green varnished tiles. It is mounted by 884 steps.

NANNINI, Agnolo (known under the name of *Firenzuola*, the place whence his family originated), a celebrated author, born in Florence, in 1493, studied at Sienna and Perugia, went to Rome, and entered the order of Valombrosa, and became successively abbot of Sta. Maria di Spoleto, and of S. Salvador di Vajano. He was, from his youth, a friend of the noted Pietro Aretino, whom he resembled in his morals. The time of his death is uncertain. His works, of which the best edition appeared at Florence (3 vols. 1763), bear the marks of a lively, satirical, licentious mind; they are partly in verse and partly in prose, and are celebrated for their purity of style, on which account they are often cited by the Crusca. Among them are two comedies, *I Lucidi* and *La Trinunzia*, an imitation of the Golden Ass of Apuleius, eight *Novelle*, and a Dialogue on the Beauty of Women, &c.

NANTES, a city of France, capital of the department of the Lower Loire, an episcopal see, is situated on the Loire, twenty-six miles from the Atlantic, in an agreeable country, formerly in the province of Brittany; lon. 1° 23′ W.; lat. 47° 13′ N.; population, 81,739. It is one of the largest and richest commercial cities in France. Its old ramparts have been demolished, and it is now connected with its five suburbs, which surpass the city in extent and beauty; it has twenty squares, seventeen churches, and many handsome buildings; the streets are generally well laid out and neatly paved. Nantes contains, besides the various judicial and executive offices, a commercial chamber, a commercial tribunal, a lyceum, a medical and anatomical school, a navigation school, a public library (30,000 volumes), a picture gallery, and other scientific and literary establishments. The manufactures are extensive and increasing; cloths, cotton goods, cutlery, printed linens, hats, leather, cordage, iron, cables, earthenware, glass, spirituous liquors, are among the principal articles produced. Ship-building is carried on to a considerable extent. The sugar refineries are numerous. Its commerce with Africa, the American and Indian colonies, and all parts of Europe, is active and important. Its inhabitants are also engaged in the cod and other fisheries. Ships of above ninety tons unload at Paimboeuf, a village twenty miles below Nantes. In 1824, 2963 vessels entered the port, of which 352 were engaged in the fisheries, and 2392 in the coasting trade. Henry IV. here issued the edict called from this city, granting the Protestants the free exercise of their religion, in 1598. (See *Huguenots.*) Louis XIV. revoked it in 1685. Nantes suffered much during the revolution, by the war of the Vendée, carried on under its gates, by the atrocities (*Noyades* and republican marriages) of the infamous Carrier (q. v.), and by the interruption of its commerce. Before the conquest of Gaul by the Romans, it was the capital of the Namneti or Nanneti. It was afterwards, with Rennes, the residence of the dukes of Brittany, and was annexed to France by the marriage of Louis XII. with Anne of Brittany.

NANTUCKET; an island of Massachusetts, south of the peninsula of cape Cod, from which it is distant about twenty miles. It is about 120 miles south-south-east of Boston. The island is fifteen miles long, and its widest part is eleven miles; lat. 41° 13′ to 41° 22′ N.; lon. 69° 56′ to 70° 13′ W. The town of Sherburne formerly comprehended the whole island; but this name is now out of use. The island, town, and county of Nantucket have the same limits; but the county of Dukes is associated with it for several political purposes. A great part of the inhabitants are of the denomination of Friends, or Quakers. The land is mostly held in common. Little attention is paid to agriculture; and the sheep and cows of all the inhabitants feed in one great pasture. The right of the island was originally granted by William, earl of Sterling, to Thomas Mayhew, and conveyed by him to nine proprietors, who divided it into twenty-seven shares, in 1659. It is mostly a joint property to this day, although the number of shares has increased to more than 3000. The inhabitants are mostly concerned in the whale fishery, and the seamen are the most skilful and adventurous in the world. Their trade suffered greatly by the late war, and by the war of the revolution. It has since been more flourishing, and the spermaceti works are very extensive. The port of Nantucket is on the north-west side of the island, and has a very good harbour. Nantucket contains two banks, two insurance offices, and seven houses of public worship. The population, in 1820, was 7266; in 1830, 7202. The amount of shipping, in 1820, was 28,512 tons. Education is well attended to, and the habits of the people are generally industrious and moral. For many years, Nantucket has been destitute of indigenous trees, and few are cultivated.

NANTUCKET SHOAL; a dangerous sandy shoal, south-east of Nantucket island, about forty or fifty miles long. Its breadth is various, and the shoal seems to be longer and broader in some years than in others. Many vessels are wrecked on it.

NAPÆÆ (Greek ναπη, a grove); the nymphs of woods. See *Nymphs.*

NAPHTHA. See *Bitumen.*

NAPIER, John, of Merchiston, near Edinburgh, the distinguished inventor of the logarithms, was born in the year 1550. He was descended from an ancient race of land proprietors in Stirlingshire and Dumbartonshire. His father, Sir Alexander Napier of Edinbellie, in the former county, and Merchiston, in the county of Edinburgh, was master of the mint to James VI., and was only sixteen years of age when the subject of this memoir was born. The mother of the inventor of the logarithms was Janet, only daughter of Sir Francis Bothwell, a lord of session, and sister of Adam, bishop of Orkney. There is a prevalent notion that the inventor of the logarithms was a nobleman: this has arisen from his styling himself, in one of his titlepages, *Baro Merchistonii;* in reality, this implied *baron* in the sense of a superior of a barony, or what in England would be called lord of a manor. Napier was simply *laird* of Merchiston—a class who in Scotland sat in parliament under the denomination of the *lesser barons.*

Napier was educated at St Salvator's college, in the university of St Andrews, which he entered in 1562. He afterwards travelled on the continent, probably to improve himself by intercourse with learned and scientific men. Nothing farther is ascertained respecting him, till after he had reached the fortieth year of his age. He is then found settled at the family seats of Merchiston, near Edinburgh, and Gartness, in Stirlingshire, where he seems to have practised the life of a recluse student, without the least desire to mingle actively in political affairs. That his mind was alive, however, to the civil and religious interests of his country, is proved by his publishing, in 1593, an exposition of the Revelations, in the dedication of which to the king, he urged his majesty, in very plain language, to attend better than he did to the enforcement of the laws, and the protection of religion, beginning reformation in his own "house, family, and court." From this it appears that Napier belonged to the strict order of presbyterians in Scotland; for such are exactly the sentiments chiefly found prevalent among that class of men at this period of Scottish history.

In 1596, he is found suggesting the use of salt in improving land; an idea probably passed over in his own time as chimerical, but revived in the present age with good effect. No more is heard of him till, in 1614, he astonished the world by the publication of his book of logarithms. He is understood to have devoted the intermediate time to the study of astronomy, a science then reviving to a new life, under the auspices of Kepler and Galileo, the former of whom dedicated his Ephemerides to Napier, considering him as the greatest man of his age in the particular department to which he applied his abilities. The invention was very soon known over all Europe, and was everywhere hailed with admiration by men of science. Napier followed it up, in 1617, by publishing a small treatise, giving an account of a method of performing the operations of multiplication and division, by means of a number of small rods. These materials for calculation have maintained their place in science, and are known by the appellation of Napier's Bones.

In 1608, Napier succeeded his father, when he had a contest with his brothers and sisters, on account of some settlements made to his prejudice by his father, in breach of a promise made in 1586, in presence of some friends of the family, not to sell, wadset, or dispose, from his son John, the lands of Over Merchiston, or any part thereof. The family disputes were probably accommodated before June 9, 1613, on which day John Napier was served and returned heir of his father in the lands of Over Merchiston. He did not long enjoy the inheritance which had fallen to him so unusually late in life. He died, April 3, 1617, at Merchiston castle, and was buried in the church of St Giles, on the eastern side of its southern entrance, where is still to be seen a stone tablet, exposed to the street, and bearing the following inscription:—"Sep. familiæ Naperoru. interius hic situm est."

Napier was twice married; first, in 1571, to Elizabeth, daughter of Sir James Stirling of Keir, by whom he had a son and a daughter; secondly, to Agnes, daughter of James Chisholm of Cromlix, by whom he had ten children. His eldest son, Archibald, who succeeded him, was raised to the rank of a baron by Charles I., in 1627, under the title of lord Napier, which is still borne by his descendants. A very elaborate life of him was published in 1835 (Blackwood, Edinburgh).

NAPLES (*Napoli*); capital and royal residence of the kingdom of the Two Sicilies, in the Terra di Lavoro; lat. 40° 50′ N., lon. 14° 15′ E., with 351,754 inhabitants, exclusive of foreigners. Antiquity gave it the title of *Otiosa;* at present, notwithstanding history records forty rebellions by the Neapolitans, it bears the appellation of *Fidelissima.* Its situation, population, and wealth, entitle it to rank among the first cities of the world. Splendidly situated on the margin of a majestic bay, from which the islands of Capri and Ischia rise in bold outline; overlooked and menaced, on the right, by Vesuvius; on the left gently sinking into the arms of the Pausilippo,—it seems to revel in the blessings which Heaven pours upon the happy land. The ancients knew how to appreciate the enchantments of this region, and fables told of a temple and grave of a Siren, by name *Parthenope* (from which it derived its ancient name), situated here; but the fable and the name only denote the charms of this Eldorado. The Neapolitan is still proud of his country: he calls it a piece of heaven fallen upon the earth, or exclaims, with patriotic ardour, "See Naples and die (*Vedi Napoli e poi muori!*") And, indeed, few regions possess so many advantages. The air is mild, balmy, and salubrious; the heat of summer, except when the sirocco blows, is tempered by the cooling influences of the sea, whose azure mirror attracts and delights the eye, while its bosom affords a bounteous variety of fish; the fields are decked with grain and vines, which wind picturesquely around the elms and noble fruit-trees. About 350,000 people throng the streets of the city, in which the bustle ceases not, by night or day. The most spacious and magnificent of all the streets—the Toledo—resembles a perpetual fair, and the passenger must be cautious to avoid being run over by the *curricoli*, or one horse vehicles, which dart by with the rapidity of lightning. The harbour, which, however, is not very large, swarms with vessels from all quarters of the globe; and the pier, or mole, is always full of men, who are either pursuing their business, or are idly assembled around the booth of a pulcinello, or around a juggler or minstrel, and improvvisatore. The fashionable world, especially in the evening, promenade in superb equipages the streets Sta. Lucia and Chiaja, which stretch along the sea; the last is adorned with stately palaces, among which is the Villa Reale, a royal garden, lying on the edge of the sea, and containing the celebrated group of the Farnese Bull. The prospect over the bay, to Vesuvius and the coasts of Sorrento, is unique. But it is only nature and the activity of its present, with the various memorials of its past existence, that makes Naples and its environs so enchanting. The reflecting traveller, after having contemplated, in Florence and Rome, the wonders of art, and the monuments of proud times that are gone, —great even in their ruins,—finds in Naples little to gratify, and much to offend his taste for the beauties of art. The luxuriance of nature seems to have been communicated to the style of art, and given it a character of exaggeration. This is true of the architecture, with the exception of the office of finance, in the street called Toledo. The edifices of importance in Naples betray bad taste, in excess of ornament and unsuitable additions, or bear the stamp of insignificance in their baldness and uniformity. Statuary and painting are in no better condition. Music has been more successfully cultivated. Those ornaments of Rome—obelisks and fountains—appear here only in miserable imitations. Even the public inscriptions, particularly those of the time of the Spanish dominion, are written in a style of Oriental bombast. Among the 122 churches (none of which are distinguished for their architecture), the 130 chapels, and 149 monasteries, that of St Januarius, or the cathedral, is the principal. It was built in 1299, from the designs of Niccolo Pisano; but the Neapolitans have endeavoured to destroy, as much as possible, its Gothic character. The body of the saint reposes in a subterranean chapel, under the choir. His blood is kept in the splendid chapel of the Treasure, adorned by four altar-pieces, from the pencil of Domenichino. Il Gesu Nuovo is considered the handsomest church in Naples; at least, it has the best dome, though it is overcharged with unmeaning ornament. The church of the rich convent of S. Chiara resembles a dancing-hall, rather than a temple; it formerly contained some frescoes by Giotto. S. Domenico is large; S. Filippo Neri, rich in marble and paintings; S. Paola Maggiore shows, on its front, the remains of an ancient temple of Castor and Pollux; S. Apostoli is admired; small, but hallowed by the tomb of Sannazzaro, is the church Sta-Maria del Parto in Mergellina, founded by him. The Carthusian monastery S. Martino, situated on a hill, under the castle of S. Ermo, enjoys a most delightful prospect, and is, at present, the barracks of the Invalids. The whole structure is superb, and the church is ornamented with peculiar richness. Above the monastery is situated the castle of S. Ermo, which commands the whole city, and, with its cannon, checks the violences of the lazzaroni (q. v.), of whom there are about 30,000. Naples is also fortified against external attacks, especially by way of the sea; for to the east lies the Castello Nuovo, and, to the west, the Castello del Uovo (so called from its oval shape) extends, on a rock, into the sea. Among the palaces, the royal palace is distinguished above the rest for its architecture; the place before it is one of the greatest ornaments of Naples. Another royal palace at Capo di Monti, is unfinished, but contains many paintings, and other works of art. The ancient residence of the viceroys of Naples, La Vicario has been appropriated to the accommodation of several tribunals, and, in part, converted into prisons. Among the other palaces are the Maddalone, Francavilla, Gravina, Tarsia, which last has a considerable library, open to the public. The most important collections in the arts and sciences are contained in the building of the academy Degli Studj (Museum Bourbon), the lower apartments of which are allotted to ancient statues, of which we shall here mention only the Farnese Hercules, the Farnese Flora, the equestrian statues of the two Balbuses, the Venus καλλιπυγος (*aux belles fesses*), and an excellent Aristides. The second floor contains a valuable collection of Etruscan vases, a gallery of paintings, and the royal library. The university founded by Frederic II., in 1224, is of some consequence as a building, but of little note as a place of education. It contains several good collections; for instance, a mineralogical cabinet. The botanical garden is gradually improving. There is also an observatory, a royal medical college, a military school, a naval college, an academy of agriculture, manufactures, and arts, a college for the instruction of Chinese and Japanese youth, two Jesuit colleges, &c., and a royal society of sciences. The number of benevolent institutions is above sixty. Among them are two large hospitals—*Degli Incurabili* (where, however, sick of all kinds are received) and *Della Santissima Annunziata*, which is very rich, and receives and provides for foundlings, penitent females, &c. There are five other hospitals, many religious fraternities, and several conservatories, which last were long famous as the seminaries of music for all Europe. The Albergo dei Poveri, with a school of mutual instruction for 400 children, is one of the greatest buildings of the kind. But pleasure, not serious business, has its abode in Naples, and amusement is the general aim. For the idle populace, there is no want of entertainment—pulcinellos, music, oranges, macaroni, and room to sleep. For the better classes, there are four theatres, of which the largest, S. Carlo, was burned in 1816, but has been splendidly rebuilt. Besides this theatre, there are the Teatro Nuovo, de' Fiorentini, and S. Carlino. In respect to music and representation, they hardly reach mediocrity; but the ballet is magnificent. The nobles are opulent and fond of parade; the citizens are thriving; and the lowest class (the lazzaroni) are, in general, so temperate that, from the cheapness of provisions, they can live with the least pittance, got by work or begging, and reserve something for the *divertimenti* on the mole, and, if they have no other shelter, trust to the mildness of the climate, and spend the night under the portico of a palace or a church. Compared with the number of inhabitants, the manufactures are unimportant; the artisans have little skill. The furniture made in Naples is clumsy. The best jewellers, tailors, and shoemakers are foreigners; the best *traiteurs*, Milanese; and the only circulating library was set up, a few years ago, by a Frenchman. From the situation of the city, its commerce might be extensive. The bank of the Two Sicilies has a capital of 1,000,000 ducats. Female beauty is rare in Naples, but the men are vigorous and well formed, especially at the age of maturity. In literary cultivation, the Neapolitans are altogether behind the other Italians, although they have many famous names. Among the scholars of the nineteenth century, some Neapolitans are distinguished, as Piazzi, Cuoco (author of a History of the Revolution of 1799, and of the *Viaggi di Platone in Italia*), the prince of S. Giorgio (an antiquarian and poet), the duke of Ventignano (a tragic poet). The lawyers, 4000 in number (called *paglietti*, or *straw-hats*), hold a great portion of the real estate in their hands, in consequence of the number and length of the lawsuits. The character of the people is not so suspicious as many travellers have represented it. There is much good humour and cordiality, and a temperance worthy of imitation among them; with all their violence, murders are seldom heard of. The immorality is not more than that of other great cities; and the love of idleness and pleasure has its foundation and excuse in the nature of the climate.

> *La terra molle, e lieta, e dilettosa,*
> *Simili a se gli abitator produce.*
>
> TASSO'S *Ger. Lib.* i. 62.

The environs of Naples are rich in wonders of nature, art, and innumerable remains of antiquity. On the west side of the city is the ridge of the Pausilippo. It is said to owe its name to the effect of its beauty in lulling the sense of grief (*ἀπο της παυσεως της λυπης*). Its grotto is an arched way, which the ancients often mention, but which Alphonso I. enlarged, and the viceroy Peter of Toledo paved. (See *Pausilippo*.) In a garden above it is situated the pretended tomb of Virgil, a *columbarium* or Roman tomb, with several niches, in which once stood urns. The laurel, which once flourished there, but which had to surrender its foliage to every traveller, is gone. Following the road through the grotto of Pausilippo, we come to the lake of Agnano, which is enclosed in a picturesque manner by mountains, of which the one on which is situated the monastery of the Camaldoli is the highest. The prospect from this eminence extends over the whole of Campania Felix, far out over the islands and sea, and is incontestably one of the richest and most delightful in the world. The lake of Agnano has the property of boiling up in some places, but is not, however, hot. In the summer, when all the hemp of the neighbourhood is rotted in the lake, the air is extremely unhealthy. On its banks are the sudatories, or vapour-baths of S. Germano, consisting of vaults, from the floor of which a sulphureous vapour issues, and the celebrated *Grotta del Cane*, the bottom of which is covered with a stratum of carbonic acid gas, in which the guides generally immerse a dog, and draw him out, when on the point of suffocating, to recover in the open air. A grotto leads into another romantic valley, surrounded by the Leucogean rocks. At the foot of these hills is the *Acqua delle Piscianelle*, a very warm sulphureous water, issuing from the ground with a noise. On the other side of the rocks lies the Solfatara (*Forum Vulcani, Campi Phlegræi*). a very remarkable volcanic valley, 900 feet long, and 750 broad. A volcanic mountain was, in all probability, once carried down here, without being entirely extinguished. The ground, which is covered with a whitish clay, and trembles under the feet, is hollow; from every hole and crack, sulphureous vapours issue. The deposits of the native sulphur, in various colours, on the wild rocks, increase the terrific appearance of this region. On leaving it, and turning towards Pozzuoli, all the charms of southern flowers, and the prospect of the sea, greet the eye. We approach Pozzuoli over the remains of an ancient road, admiring, on the way, the relics of former splendour, particularly the ruins of a *Piscina* (commonly called a labyrinth), of a great amphitheatre, and of the *thermæ*, or warm baths. The old Via Campana is studded, on both sides, with the picturesque ruins of ancient tombs, consisting mainly of *columbaria*. and still exhibiting traces of painting. The town of Pozzuoli is situated on a small peninsula, and contains 14,600 inhabitants. The cathedral was formerly a temple, dedicated to Augustus, and still contains several antique columns. Of a statue of Tiberius, only a very beautiful pedestal, in the market place, has been preserved. By far the most beautiful monument of Roman antiquity is the ruins of a temple of Jupiter Serapis, which was built in the reign of Domitian. Three columns only of Cipollino marble are at present standing, overlooking in sadness a chaos of beautiful fragments. What is called the *bridge of Caligula*, in the harbour of Pozzuoli, consists of a row of pillars, projecting above the surface of the water, probably the ruins of a mole. On the other side of the city lies Monte Barbaro (the ancient *Mount Gaurus*, celebrated for its costly wines), at the foot of which stood Cicero's academy and Cumanum. Next in order is the Monte Nuovo, which was raised in 1538, in the night, by an earthquake, that utterly destroyed the contiguous village of Tripergole. On this occasion, the neighbouring Lucrine lake, whose oysters and fish were in so high repute with the ancient gourmands, was almost entirely drained, and is now a small pond. Not far from this place are the steam-baths of Tritola (called, also, *Stufe di Nerone*), a series of grottoes, filled with a hot, suffocating vapour, to which the sick resort from Naples. Through the cave of the Cumæan Sibyl, mentioned by Virgil, we pass from the Lucrine lake to lake Avernus, a round basin, surrounded by woody hills, probably the crater of an extinct volcano. Following the road along the bay of Pozzuoli, we come to Baiæ (q. v.), highly celebrated among the Romans, where there are still several ruins, which seem to be the remains of the famous *thermæ*. In the vicinity lies the Lago di Fusaro, which, in this region of fables, was the Acheron of the ancients (*Acherusia Palus* of Virgil), and between this and the Avernus is Cuma, displaying but few traces of the ancient Cumæ. Between Baiæ and the village of Bacola (the Bauli of the ancients) is the *Piscina Mirabile*, the remarkable remains of an ancient reservoir, and the *Cento Camarelle* (Hundred Chambers), a suite of twelve or thirteen subterranean apartments, probably the foundation of some great edifice. On one side of Bacola is situated a lake, called Mare Morto, and connected with the sea merely by a narrow strait, on the banks of which the ancients placed the Elysian fields. At the eastern extremity of the bay of Pozzuoli lies Capo Miseno, the site of an ancient city. The *Grotta Dragonara* is now the most important object there. Between Cumæ and the river Volturno, on a large marsh (Lago di Patria), is a tower, called *Torre di Patria*, which is regarded as the sepulchre of Scipio Africanus. On the east side of Naples, the road leads to Vesuvius, Herculaneum, and Pompeii. (*See these articles.*) Four miles from Naples lies the village and palace of Portici. The style of the palace is entirely destitute of taste, and it is untenantable. The high-road passes through one of the courts of the castle. Sixteen chambers contain a collection of more than 1500 fresco paintings, and other treasures of antiquity, saved from Herculaneum. At Caserta, Charles III. employed Vanvitelli to erect a palace, imposing from its magnitude, but, from its monotony, resembling a barrack rather than a royal residence. The situation is excellent. The famous aqueduct *(acquidotto Carolino)*, which conveys the water from Monte Taburno to Caserta, is unique of its kind, and comparable with the boldest works of the Romans. While the country around Naples resembles a flourishing garden, the sea is also adorned with the most beautiful scenes. A sail in the bay of Naples, along the coast, or to the islands, is one of the greatest pleasures in the whole tour of Italy. Capri (q. v.), which rivets the attention, is at some distance. More convenient for short excursions are the small islands of Lazaretto and Nisida, and near to Baiæ and Miseno, are Procida and Ischia. Vineyards, gardens, groves, and villages alternate in charming variety, in Ischia; in their midst rises majestically to the height of 2356 feet Mt. Epomeo, or S. Nicola, formerly a volcano; but, since 1302, it has not disturbed the tranquillity of the beautiful island. The sick derive benefit from the cold mineral springs there. The island of Ischia contains 24,000 inhabitants. Respecting Naples, see Romanelli's *Napoli antica e moderna* (1815, 3 vols.); *Nuova Guida di Napoli* (1826).

Naples, Kingdom of, See *Sicilies, The Two.*

NAPLES AND SICILY, REVOLUTION OF, in 1820 and 1821. The civil condition of Italy has contained, for centuries, the seeds of political revolutions. The French revolution matured and unfolded them. In Naples and Palermo, new causes of discontent arose, which resulted in an insurrection. The king, before he returned to Naples, had abolished (July 23, 1814) the constitution established in Sicily by lord Bentink, in 1812, on the model of the British. The reforms introduced by the minister Medici were carried into effect too slowly to satisfy the people; and the Neapolitan officers, who had served under Murat, could not endure the humiliations inflicted on their national pride by the Austrian field-marshal, count Nugent, commander-in-chief of the army of the Two Sicilies, and minister of war. When count Nugent abolished the French organization of the army, and introduced the Austrian; when the police made use of the Calderari (q. v.) to suppress the Carbonari; when Medici raised the land tax to thirty-five per cent. on the income, and, in consequence of the concordate with the pope, re-established forty-two monasteries; and the success of the Spanish constitution appeared to favour the plans of the Carbonari, who then numbered 642,000 members,—Michael Morelli, lieutenant of a troop of horse, and the priest Louis Minichini, ventured to commence an insurrection, with the view of obtaining a representative constitution. July 2, 1820, Morelli induced his squadron to raise the cry, "God, the king, and the constitution!" The insurgents increased, embracing both militia and regular troops, and, a day or two later, intrenched themselves in Monteforte. Several cities, as Salerno, now declared themselves for the cause of the constitution, and the soldiers refused to fight against their comrades. On the evening of the 5th, general William Pepe placed himself at the head of a regiment of dragoons in Naples, and united with the insurgents, who declared him their leader. On the following day, another regiment in Naples, which guarded the royal palace, and the civic guard, sent deputies to the king, with a petition that he would comply with the wish of the nation. On the 6th, the king issued a proclamation, declaring that he would, within eight days, present the plan of a constitution. At the same time, he appointed a new ministry. The troops were ordered to retire into their quarters; but they demanded that the king, within twenty-four hours, should accept the constitution of the Spanish cortes of 1812. Ferdinand I. resigned the royal power to the crown-prince, as *alter ego* (q. v.), and the latter promised the introduction of the Spanish constitution. The king confirmed this, and promised his approbation of all the future doings of the *alter ego*, who now established a provisional junta, to which the lieutenant-general Florestan Pepe and baron David Winspeare belonged. W. Pepe, having been nominated by the vicar-general commander-in-chief of the army, entered Naples, on the 9th, at the head of the insurgents, and, on the 13th, the king and crown-prince entered the hall of the junta, to swear to observe the Spanish constitution, with certain modifications. Thus the revolution appeared to have been completed without bloodshed.

In Sicily, the revolution took an unexpected direction. When information of the revolution in Naples reached Palermo, the people immediately expressed a wish for the adoption of the Spanish constitution. It happened that, on the festival of St Rosalia, the commander of the place, general Church, an Englishman, having insulted the popular badges—the yellow cockade and the Sicilian eagle—a tumult ensued. The general saved himself by flight: all measures taken for the public tranquillity were fruitless: the people possessed themselves of the arms in the forts, broke open the prisons, murdered the prince Catolica, together with other distinguished men, and committed the wildest extravagances. A Franciscan monk, Joachim di Vaglica, placed himself at the head of the furious multitude, and put to flight the

Neapolitan troops. This happened on the seventeenth, on which day about 1500 men were killed and wounded. Thereupon general Naselli sailed for Naples with about 100 soldiers. The Neapolitans who had escaped slaughter, to the number of about 6000, were treated as prisoners. At length, a junta, established by the municipality and the heads (*consoli*) of the communities, restored order, by instituting a guard of citizens, among whom the most distinguished persons, as well as priests and monks, performed service. The persons who had been put in confinement, were sent out of the city without arms, and an amnesty was proclaimed. The junta, July 26, summoned deputies from the Sicilian cities, to meet in a national assembly at Palermo; but Messina and Catanea refused to send any. The junta, at the same time, sent deputies to the government at Naples, to treat concerning the independence of Sicily, and an alliance between the two nations; but, on information of the events of the 17th, all the Sicilians in Naples were declared prisoners of war, to protect them from the fury of the people; and it was determined to reduce Palermo by force, where the junta, though they had concluded to acknowledge king Ferdinand, still insisted on a separate parliament for Sicily. In the mean time, a civil and guerilla war had broken out in Sicily, because particular towns, as Messina and Trepani, opposed the cause of independence. After general Florestan Pepe, with 4000 men, had landed in Sicily, Sept. 2, other cities likewise declared for Naples, and the troops of Palermo were almost everywhere beaten. About the 20th, a treaty for the submission of Palermo was concluded; but the monk Vaglica instigated the people to rebel, removed the junta, and formed another government, under the administration of the prince of Palermo, so that hostilities recommenced. At length, a capitulation took place, Oct. 5, according to which, a majority of the Sicilians were to settle the question relating to the national parliament, and the Neapolitans took possession of the city and the forts. Florestan Pepe allowed a general amnesty, at the same time proclaiming the Spanish constitution, and appointed another junta. But the parliament assembled at Naples rejected this arrangement, and sent general Coletta, with 5000 Calabrians, to Palermo, to supersede Pepe. He disarmed the inhabitants, and imposed upon them, as a punishment, the expenses of the war,—a fine of 90,000 *oncette*. The united parliament, consisting of deputies from Naples and Sicily, was opened, Oct. 10, by the king in person, and party spirit soon mingled in the new order of things. The Carbonari saw themselves surrounded by secret enemies, particularly the revived Calderari, who were joined by all the discontented, and the ministers became objects of suspicion. The monarchies of Europe would not sanction the forcible degradation of the royal power, least of all Austria, which had received a formal assurance of the continuance of monarchy in the kingdom of the Two Sicilies, and the non-introduction of the representative system. The powers of the first rank therefore declined receiving the new ambassadors from Naples, and, Aug. 25, Austria proscribed the Carbonari of the Lombardo-Venetian kingdom. The forces of the Neapolitan government consisted of 52,000 troops of the line, supported by 219,000 movable national guards, and the standing national guards amounted to 400,000 men. There were also 10,000 *gens d'armes*, and men employed to guard the coasts; but the spirit of the regular troops was not to be depended on. Many officers left the service, and ill-will arose between the soldiers and citizens, which was increased by the privileges granted to the militia. The administration of the government was interrupted, and the distrustful people did not share the enthusiasm of their orators. The deficit in the revenue made a loan of 1,500,000 ducats from Parisian bankers necessary. The new fabric of government had no firm foundation to support it in a contest with Austria, which was collecting an army of 80,000 men, under general baron Frimont, in Upper Italy. Russia and Prussia made common cause with Austria; and, at the congress of Troppau, where the emperor of Austria arrived, Oct. 18, the emperor Alexander, Oct. 20, and the king of Prussia, Nov. 7, together with their ministers of state, and several ambassadors, the principle of armed interference in the internal affairs of a state, to support the (so called) legitimate authority, and the monarchical principle, in Europe, was first declared and acknowledged; but the application was determined on at Laybach. At Troppau, the three monarchs wrote, with their own hands, to the king of Naples, Nov. 20, to invite him to Laybach. The king of France also advised him to take this step. The appearance of an English and French squadron, at this time, in the roads before the harbour of Naples, to protect the royal family, in case of urgent danger, excited distrust and alarm in one party, and hope and joy in the other. The hall of the parliament, and the lodges of the Carbonari, resounded with heroic and patriotic speeches. There appeared to be a universal confidence in victory: none dared to utter opposite sentiments. Volunteers collected, and oath upon oath was taken. The king, Dec. 5, after receiving the letter of the monarchs assembled at Troppau, determined to go to Laybach, and signified this to the parliament, Dec. 7; whereupon this body declared that they could not consent to his journey, unless it was undertaken to obtain acknowledgment of the constitution sworn to. At last the king declared, on the 10th, that his participation at Laybach had no other end than to maintain the Spanish constitution, as sworn to, and to prevent war. The ministers now resigned, and the king named others. The king sailed on the 13th, with his wife, the duchess of Floridia, in a British ship of the line, landed, on the 19th, at Leghorn, and went through Florence to Laybach, where he arrived Jan. 8, 1821. The crown-prince took the constitutional oath as regent in the parliament, at Naples, on the 18th. The parliament, Dec. 19 and 21, decreed the abolition of all feudal burdens, services, &c. Entails were likewise destroyed. The army consisted of three divisions, in three important situations, the first on the road to Itri, the second in the pass of San Germano, and the third, under general William Pepe, on the heights of Abruzzo. They formed, with the garrisons, a body of 54,000 troops of the line, and from 50 to 60,000 militia, national guards, and volunteers. A small squadron of frigates and gun-boats was destined to intercept the supplies of the Austrians, in the Adriatic sea. For months before the actual commencement of the war, a general enthusiasm was manifested for liberty and the defence of the country. On the arrival of the king in Laybach, where the emperor of Austria had arrived, Jan. 4, and the emperor of Russia, Jan. 7 (the king of Prussia had returned from Troppau to Berlin, Dec. 21), he found the congress determined to acknowledge nothing which had happened in Naples since July 5. Austria, for the security of its own power in Italy, promised the aid of her troops to carry into effect the secret treaty concluded with the king of the Two Sicilies against the introduction of the representative system. By the treaty of Feb. 2, concluded in the name of the three courts of Vienna, Petersburg, and Berlin, an Austrian army was to be furnished to the king, to be supported by him, from the time of its passage over the Po, for the space of three years, the period during which it was to remain in the kingdom. On the 9th, the ministers of the three great powers announced to the regent that an Austrian army was approaching the borders, to take possession of the kingdom, either peaceably, or by force; and that, should it be driven back, a Russian army was ready to support it. William Pepe now summoned to arms all the volunteers and militia, under their ancient names, legions of the Bruttii, Samnites, &c., and reported that he had assembled a body of 150,000 men, badly clothed, indeed, and worse armed. Meanwhile, baron Frimont (q. v.), at the head of an Austrian army, had passed the Po, Feb. 5, and advanced from Bologna, on the two principal roads, on the right through Tuscany and the States of the Church, and on the left through the legations and the Marks, towards Abruzzo. A small Austrian squadron, under the command of the marquis of Paulucci, lay, prepared to sail, in the harbour of Ancona. A proclamation from king Ferdinand, at Laybach, Feb. 23, announced to the army that he should return to his kingdom, and commanded his subjects and troops to assist the Austrian army, which was advancing to Naples for the protection of the true friends of their country and the faithful subjects of the king. He afterwards proceeded to Florence. The frontiers of Naples were guarded with care: from Gaeta to the Apennines, was protected by Carascosa, who was stationed, with the best troops, on the road from Rome to Naples by San Germano, which was made impassable. William Pepe defended Abruzzo, which was guarded by rocks, defiles, and mountain streams. The head-quarters were at Aquila. From hence, Pepe, in order to anticipate the attack of the Austrians, sallied forth, Feb. 21, into the Roman territory, occupied Rieti, and pressed forward, even to Terni; but a body of 2500 Austrian cavalry from Viterbo having arrived at the bridge of Otricoli before him, he left Terni, and his position at Rieti, without firing a shot. Frimont, hereupon, on the 24th, fixed his head-quarters at Foligno. Hence the Austrians spread the royal proclamation of the 23d, and Frimont, at the same time, issued one of his own, declaring to the Neapolitans that he came as a friend, and would exact contributions from no place excepting those where the will of the king was opposed. This dissolved the slight band of connexion among the militia, already discouraged by want of ammunition, food, and clothing, and entire battalions now dispersed. General Pepe, March 7, with 10,000 men, attacked the vanguard of the Austrian army, but was defeated; whereupon his troops fled in disorder to the mountains; so that, at ten o'clock in the evening of this day, the Austrians entered Cività Ducale, together with the fugitives. On the same day, a body of 3000 men, advancing from Leonessa, was put to flight near Lugo. These two battles on the 7th, the first and last of the campaign, cost the Austrians hardly sixty men, and decided the revolution. As the Austrians continued the pursuit on the 9th, the Neapolitans evacuated Velino, and the strong castle of Antrodocco, the important pass at Madonna della Grotte, and that at St Thomas, so that the Austrians, on the evening of the 10th, occupied Aquila. Thus the war ended, without the army under Carascosa, on the Garigliano, having made a movement. General Pepe could not rally the scattered forces, and he hastened to Naples. The Austrians marched from Abruzzo to surround the right wing of the army on the Garigliano. Carascosa immediately left the stations of Itri, Frondi, and San Germano. The militia now began to disperse in this quarter also, so that the regent, who was in Capua, returned to Naples, where fear and confusion prevailed, in consequence of the news received from Abruzzo. All measures for the continuation of the contest were baffled by the rapid advance of the Austrians. At length, parliament, March 12, besought the regent to act as mediator between the nation and the king. The king, however, professed himself unable to give any promises concerning the future, or to stop the march of the Austrians. On the farther advance of the Austrians, Carascosa's army dispersed. The militia returned home, and the soldiers of the line joined the Austrian troops. The royal guard alone remained with general Carascosa, and occupied Capua, tearing off the national cockade, and returning to their allegiance. Thereupon the truce requested by Carascosa was signed, March 20, and Capua, as well as the remaining places, were taken possession of by the Austrians, in the name of the king of Sicily. The Carbonari now meditated a mountain and guerilla warfare, when the capitulation of Naples, including the strongholds of Gaeta and Pescara, concluded the 23d, extinguished the last spark of the revolutionary fire. The great lodge of the Carbonari was dissolved. William Pepe, and the remaining leaders of the insurrection, received permission to leave the country. The parliament separated the 24th, and, a few hours after, the Austrian army marched into the capital. The regent, with his family, went to Caserta. The king solemnly entered Naples, May 15. He had already, while at Florence, appointed a provisional government, which now abolished the revolutionary institutions, restored the old forms, dissolved the Neapolitan army, and prosecuted the authors of the insurrection. Divisions of the Austrian army, which occupied Sicily in the beginning of June, first restored quiet in 1822, in the provinces (where Morelli, Lorenzo de' Conciliis, and Minichini wished to excite a guerilla war), after the people of both kingdoms had been disarmed. General Joseph Rossarol excited new commotions in Sicily, by proclaiming a republic at Messina; but his plan to do the same in Calabria failed. The troops which he had instigated to revolt submitted to the king, and nothing remained for him but flight into Spain. Thus ended the revolution. For further information, see *Sicilies, Kingdom of the Two.*

NAPLES YELLOW, a dye, is prepared by exposing lead and antimony with potash to the heat of a reverberatory furnace. It stands tolerably well, but turns black upon the contact of iron. A native pigment of this kind is also obtained from a species of lava.

NAPOLEON BONAPARTE. See *Bonaparte.*

NAPOLI DI MALVASIA. See *Monembasia.*

NAPOLI DI ROMANIA, or NAUPLIA; a city and port of the Morea, on the eastern coast of a small peninsula, on the gulf of Nauplia or Argolis. The harbour is capable of accommodating 600 ships. Population, before the revolution, 10,000; at present, about 5000. The Venetians fortified the place so strongly, on Vauban's system, that it can only be reduced by famine. Among the outworks are Palamidi, or Upper fort, which commands the lower town, and Albanitika, or Lower fort, in which are the chief batteries towards the gulf. The only approach by land is a road enclosed by the sea and by rocks, and which is swept by the batteries of Palamidi, and the walls and bastions of the lower town. It was taken possession of by the Turks in 1715. During the Greek revolution, it was first reduced by the Greeks (1823), and, in April, the first regular Greek congress was held there, and, in 1824, it became the seat of the government. Ibrahim advanced towards Napoli in 1825, but, being repulsed in the battle of the mills, abandoned the intended attack. See *Greece, Revolution of.*

NARBONENSIS. See *Gaul.*

NARBONNE (*Narbo-Martius*); a city of France, in the department of the Aude, seven miles from the gulf of Lions, with which it is connected by the canal of Narbonne; lat. 43° 11′ N.; lon. 3° 0′ E.; population, 10,097. The streets are narrow and crooked, the houses badly built. The archiepiscopal palace, a sort of fortress, with square towers, and the cathedral, are the most remarkable buildings. There are several churches, hospitals, and public establishments here. Narbonne was one of the oldest cities of Gaul. In 118, a Roman colony was established there. It became the capital of Gallia Narbonensis, and was ornamented with splendid buildings, of which some fragments only are still to be seen. Simon de Montfort demolished the walls in the war against the Albigenses: the present walls were built by Francis I. The archbishopric of Narbonne has been merged in that of Toulouse.

NARBONNE-LARA, Louis, count de, born at Colorno, a place in the duchy of Parma, in 1755, went to France in 1760, was educated at court, entered the military service, and, in 1785, was colonel of the regiment Angoumois. He was afterwards employed in the war office, and, having embraced the national cause in the revolution, was named commander of the national guards of the department of the Doubs. In 1794, he was appointed *maréchal de camp* by the assembly, and, at the end of that year, became minister of war. By his influence, three armies were organized, under the command of Rochambeau, Luckner, and Lafayette. In 1792, he was removed from his post in the ministry, and he immediately joined the army. After the 10th of August, he was outlawed, and owed his safety to the friendship of Mme. de Staël. Narbonne retired to England, and used every exertion to save the king. In 1800, he received permission to return to France, and, in 1809, was nåmed general of division. He was, not long after, appointed minister plenipotentiary to the court of Munich, and aid-de-camp of Napoleon. In this capacity, he made the campaign of 1812, was sent ambassador to Vienna, in 1813, and, in the same year, died at Torgau, of which place he had just been appointed commander.

NARCISSUS, or DAFFODIL; a beautiful and favourite genus of plants, belonging to the natural family *amaryllideæ*, and to the *hexandria monogynia* of Linnæus. The species are chiefly natives of the south of Europe, and the neighbouring parts of Africa and Asia. They have been cultivated, from remote antiquity, on account of the elegance of their flowers, which vary in colour, in the different species, from snow-white to the deepest yellow, and, besides, give out a delightful fragrance. On account of their easy culture, they are common in the flower-gardens, and have produced numerous varieties. The root is a tunicated bulb. The leaves are linear, about as long as the stem, flat, or slightly canaliculate. The flowers are terminal, solitary, or in a cluster; never upright, but always inclining in one direction. Previous to their expansion, they are contained in a membranous spatha. The corolla is double, the outer envelope consisting of six petaloid divisions, while the inner is cup-shaped, with the margin entire, or variously indented, in the different species. On this cup depends much of the beauty of these flowers; and it disappears on doubling them, which operation, unfortunately, is very easily accomplished.

NARCISSUS; 1. according to mythology, the son of the river-god Cephisus and the nymph Liriope, or, according to a less common account, Liroessa. Tiresias the Seer predicted that he would live to old age, if he should not become acquainted with himself. The surpassing beauty of the young Narcissus excited the love of all the maidens and nymphs. Echo pined away to a mere voice, because her love for him found no return. Being heated one day in the chase, he went to drink from a fountain, and there saw, for the first time, the reflection of his own beauty. Nothing could turn the unhappy youth from this fountain. His raging passion for himself destroyed him; and the compassionate gods transformed him into a yellow-leafed flower, which still bears his name. Such is the account which Ovid gives, in his Metamorphoses (lib. iii. 339—510.) The unhappy fountain, in which Narcissus saw himself, has since been shown at Thespiæ, in Bœotia—a country where, according to the accounts of travellers, these beautiful flowers still abound. For another Narcissus, see *Messalina*.

NARD (*ναρδος*, *nardus*), among the Greeks and Romans; a sort of aromatic oil; and also a sort of plant. Pliny mentions several species of the latter. The ancients were accustomed to anoint themselves with nard, at their feasts. In the Scriptures, the use of it is also mentioned (*John* xii. 3, and *Mark* xiv. 3), where different substances seem to be intended.

NARDINI, Pietro, one of the first violinists of his time, was born at Leghorn, in 1725, studied under Tartini at Padua, and soon became the most distinguished pupil of that eminent artist. In 1762, Nardini was placed at the head of the chapel in Stuttgard; but returned to Leghorn, in 1767, and composed most of his works after this period. In 1770, he went to Florence, as first violinist in the chapel of the grandduke of Tuscany, and died in that city, in 1796. His compositions are of a grave character, and must be executed in the spirit of the Tartini school.

NARRAGANSEK BAY intersects the state of Rhode Island, and is about twenty-eight miles long, and ten miles broad. Its entrance extends from point Judith, on the west, to Seekonnet rocks, on the east; and the northern termination is at Bullock's point, five miles below Providence. It receives Providence river on the north, and includes the islands of Rhode Island, Canonnicut, Hope, Patience, and several others. It affords capacious harbours, and is navigable at all seasons.

NARRAGANSETTS; one of the five principal tribes of Indians inhabiting New England at the time of the first settlement of the English colonies. They occupied a portion of the southern part of the country around Rhode Island. A small remnant of them still resides near Charleston, Rhode Island.

NARROWS, The; a channel between Long Island and Staten island, connecting New York bay with the Atlantic, nine miles south of New York. The channel is nineteen hundred and five yards wide, and is well defended by forts and batteries.

NARSES; a eunuch of the court of the emperor Justinian I., at Constantinople. The place of his birth is unknown. He so ingratiated himself with the emperor, that he appointed him his chamberlain and private treasurer. In 538, he was placed at the head of an army, destined to support the general Belisarius in the expulsion of the Ostrogoths from Italy; but the dissensions which soon arose between him and Belisarius occasioned his recall. Nevertheless, in 552, he was again sent to Italy, to check the progress of Totila the Goth. After vanquishing Totila, he captured Rome. He also conquered Tejas, whom the Goths had chosen king in the place of Totila, and, in the spring of 554, Bucellinus, the leader of the Alemanni. After Narses had cleared nearly all Italy of the Ostrogoths, and other barbarians, he was appointed governor of the country, and ruled it fifteen years. During this time, he endeavoured to enrich the treasury by all the means in his power, and excited the discontent of the provinces subject to him, who laid their complaints before the emperor Justinian II. Narses was deposed in disgrace, and sought revenge by inviting the Lombards to invade Italy, which they did in 568, under Alboin, their king. Muratori, and other authors, have doubted whether Narses was concerned in the invasion of the Lombards. After his deposition, he lived in Naples, and died, at an advanced age, at Rome, in 567.

NARUSZEWICZ, Adam Stanislaus, a Polish poet and historian of eminence, born in 1733, was descended from an ancient Lithuanian family, and entered, in 1748, the order of the Jesuits. After a journey through Germany, France, and Italy, he was made superintendent of the *collegium nobilium* of the Jesuits at Warsaw. After the abolition of his order, the king engaged him, in 1773, to write a detailed account of the first partition of Poland. His work, of which nothing has ever appeared in print, pleased the king so much, that he encouraged him to write a complete history of Poland. This work is distinguished for its acute criticism, extensive reading, and concise and unadorned style, after the manner of Tacitus, and is the most important that has ever appeared on the history of Poland. Unfortunately it is incomplete. The first volume, intended to embrace the earliest and most uncertain periods, and to be published after the other volumes, never appeared. Naruszewicz left a collection of materials for this work, in three hundred and sixty folio volumes, extracted from public and family archives, and divided according to the years of the reigns of the different kings. They were put into the hands of the famous Thaddæus Czacki, the author of an excellent work on the Lithuanian laws, who undertook to continue the history. As a poet, Naruszewicz distinguished himself in several styles, particularly in the idyl. He also wrote a Polish translation of Tacitus (1775, 4 vols.), in which he has imitated the brevity of the original with surprising success; a Biography of the Lithuanian General John Charles Chodkiewicz (Warsaw, 1805, 2 vols.); Tauryka, or History of the Tartars; and other works. He died of a broken heart, occasioned by the fate of his unhappy country, at Warsaw, 1796, and was lamented, both for his talents, and his noble and philanthropic character.

NARVA, or NARWA; a town and fortress on the west bank of the Narowa, which flows from lake Tchudskoi, or Peipus, into the gulf of Finland; population, 3580, principally Germans, mostly engaged in making nails, and sawing timber; lat. 59° 22′ N.; lon. 28° 14′ E.; seventy-five miles south-west of St Petersburg. Its commerce is considerable; the exports are timber and boards, flax, hemp, corn, &c. The fisheries, particularly of salmon, are important. Narva is celebrated for the great victory gained by Charles XII. (q. v.), in its vicinity, over the Russians, in 1700. The latter retook the place by storm, in 1704.

NARVAEZ, Pamphila de, born at Valladolid, came early to America, which was then just discovered, served (1510) under Esquibal, governor of Jamaica, and was afterwards commander of the expedition sent against Cortez by Diego de Velasquez, governor of Cuba. (See *Cortez.*) He sailed, in 1528, with four hundred men, intending to establish a colony in Florida, discovered the bay of Pensacola, and, having marched into the country, was never heard of more.

NARWHAL (*monodon*, L.). This extraordinary marine animal, of the whale tribe, which is also known under the name of *sea-unicorn,* is of considerable size, attaining the length of from fifty to sixty feet. The narwhal is distinguished from the other whales by having no teeth, properly so called, and in being armed with a formidable horn, or defence, projecting from the upper jaw. Sometimes the animal is provided with two of these formidable weapons; but, in most cases, it is single, and is attached to the left side. It is about six to ten feet long, spirally striated, of a white colour, harder and heavier than ivory. This horn, or tooth, was, at one time, in high repute in Europe, not only as a substitute for ivory, but also for its supposed medicinal powers, as an antidote against poisons, and in the cure of malignant fevers. From the accounts of voyagers, it appears that, notwithstanding this weapon of defence, as well as the strength and velocity of the animal, the narwhal is one of the most peaceable inhabitants of the ocean. It is termed by the Greenlanders the *forerunner of the whale*, as, whenever it makes its appearance, that animal soon follows. Cuvier is of opinion that there is but one species, those recognised by Lacepede and others being only varieties.

NASEBY; a village in Northamptonshire, England, twelve miles from Northampton. In 1645, Cromwell entirely defeated Charles I. in the vicinity. See *Cromwell.*

NASH, Richard, commonly called *Beau Nash,* is known to fame as the celebrated master of fashion in the watering place of Bath in England; and his fortunes are well calculated to point a moral for the place of which he was the hero. He was born in 1674, at Swansea, in Glamorganshire, and was intended for the law, but entered the army; being disgusted at the discipline and his subordinate rank, he soon forsook it, and took chambers in the Temple. Here he devoted himself entirely to pleasure and fashion; and when king William visited the Inn, he was chosen master of the pageant with which it was customary to welcome the monarch. So pleased was William with the entertainment, that he offered him the honour of knighthood; but Nash refused it, saying, "Please your majesty, if you intend to make me a knight, I wish it may be one of your poor knights of Windsor, and then I shall have a fortune at least equal to support my title." In 1704, he was appointed master of the ceremonies at Bath, and immediately instituted a set of regulations as remarkable for their strictness as for their judicious adaptation to the wants and society of the place. While in the plenitude of his power and popularity, Nash lived in the most splendid style, supporting his expenses by a long run of success at the gaming-table. His dress was covered with expensive lace, and he wore a large white cocked hat. The chariot in which he rode was drawn by six gray horses, and attended by a long retinue of servants, some on horse, others on foot, while his progress through the streets was made known by a band of French horns and other instruments. His common title was the *king of Bath;* and his reign continued, with undiminished splendour, for more than fifteen years. His health then began to decline, and his resources grew less plentiful. As the change in his spirits and circumstances became more evident, his former acquaintances gradually forsook him, and he died at the age of eighty-eight, in comparative indigence and solitude. He was buried, however, with great magnificence, at the expense of the city; and his epitaph, a neat tribute to his memory, was written by doctor Harrington

NASSAIRIANS. See *Nosairians.*

NASSAU; a sovereign duchy of the German empire, bordering on the Prussian province of the Lower Rhine Hesse-Darmstadt, and Frankfort.

The Rhine runs along its southern border, and receives the Lahn from the duchy. The superficial area is 1759 square miles, with a population of 320,470, of whom a little more than one half are Protestants. The court and about one third of the people are Calvinists; but since 1817, the Lutherans and Calvinists have been united under the title of the *Evangelical Christian church.* The face of the country is rather uneven; the soil is fertile. Hochheim, Rudesheim, Johannisberg, Marcusbrunnen, Asmanshausen, &c., yield the finest Rhenish wines. There are mineral springs at Wiesbaden (the capital), Niederselters, Ems, Schlangenbad, Geilnau, &c. The revenue of the duchy is estimated at 1,810,000 guilders; the debt at 5,000,000: the contingent to the army of the confederacy is 3028 men. The duke has the thirteenth vote in the diet, with the duke of Brunswick; and in the *plenum* he has two votes, and the fourteenth seat. The present duke of Nassau, William (born 1792), resides in Wiesbaden, and in the beautiful castle Biberich. The estates, by the constitution of 1815, are composed of two chambers —that of the nobles, consisting of the princes of the blood, six hereditary members, and six members elected by the nobility, and that of the deputies of the country, twenty-two in number. The founder of the house of Nassau appears to have been Otho of Laurenburg, brother of Conrad I. (in the tenth century). His descendants afterwards took the name of Nassau, from a castle of that name. In 1255, two lines were formed, that of Walram, or the elder line, and that of Otho. From the former is descended the present ducal house of Nassau, which received the ducal title from the confederacy of the Rhine, which it helped to establish, in 1806. From the younger line is descended the reigning house of Holland, or of Orange-Nassau. See *Netherlands.*

NATCHEZ; once a powerful tribe of Indians, residing on the eastern side of the Mississippi, in the western part of the state of the same name, whose melancholy fate has derived a new interest from the muse of Chateaubriand. According to their own traditions, the Natchez had emigrated from the south, and their manners and opinions resembled, in many points, those of the civilized tribes of that part of the country. Inhabiting a delightful country, under a mild climate, they were a polished people, in comparison with their savage neighbours. They had laws, an established worship, a temple dedicated to the Great Spirit, on the altar of which burned a perpetual fire, and chiefs who derived their origin from the sun. They had treated the French colonists with great kindness, and had been courted by them on account of their power. (See *Louisiana.*) A quarrel having taken place between a French soldier and an Indian, the latter was shot by the garrison of fort Rosalie (a French post in the territory of the Natchez), and the offenders were left unpunished. The consequence was a war, which was, however, terminated by the influence of one of the principal Indian chiefs. Soon afterwards (1723), French troops were secretly introduced into the settlement, and great numbers of the unsuspecting Natchez massacred. To this outrage was added another, which stung the Indians to madness: the French selected, as a site for a town, a spot (two miles from the present town of Natchez) occupied by a large and ancient Indian village, and ordered the huts of the natives to be removed. The latter formed a plan of vengeance: they attacked the fort by surprise, and put to death the garrison. They also destroyed all the French settlements in that part of the country. A powerful force was sent against them, and, unable to resist it, they retired silently in the night, crossed the Mississippi, and fortified themselves on the Red river, not far from Natchitoches. Pursued thither, they attempted to cut their way through the enemy; the greater part of them fell in the attempt; the males who survived were sold, as slaves, in St Domingo; the women were enslaved at home. Thus perished the tribe of the Natchez.

NATIONAL ASSEMBLY, and NATIONAL CONVENTION. See *France.*

NATIONAL DEBT. See *Public Debt.*

NATIONAL DOMAINS (*biens nationaux*); the name given to the church lands which, during the French revolution of the last century, were declared the property of the nation, and sold as such. The lands of emigrants, and the crown lands, were also declared national domains. The national domains were created by several decrees of the national assembly, occasioned by financial embarrassments. The king sanctioned a decree of the national assembly, of Nov. 2, 1789, declaring the church lands (estimated at above 3,000,000,000 of livres) at the disposal of the nation; and a decree of Dec. 19, 1789, converting the crown lands, with the exception of nine residences, into national domains. Another law authorized the sale of this public property, to the amount of 400,000,000, and ordered the issue of assignats (q. v.) to that amount, which, on Mirabeau's motion (April 17, 1790), were made a circulating medium. Not long before (February 13), the national domains were increased by the suppression of the monasteries, and, March 18 of the same year, it was decreed that a certain amount should be sold to each municipality—an important decree, which attached all the cities and towns to the new order of things. Finally (before Necker's resignation), June 29, all the national domains, except the crown lands (see *Domains*) and forests, were declared alienable. At the same time, the amount of the assignats was increased (Sept. 22, 1790) to 1,200,000,000, and gradually rose to nearly 40,000,000,000 of livres (in February, 1796). This policy made most of the purchasers of the national domains zealous supporters of the revolution. But fluctuations in the value of the assignats, and great speculations in them, were the consequences of the great issue, increased by the insecure tenure of the confiscated estates of the emigrants, which had been added to the national domains by a law of July 27, 1792. In the western and southern departments, the purchase of these estates was dangerous; erasures of names from the emigrant lists were made, and those who returned received back such of their property as had not been sold. The original purchasers of national domains were, therefore, desirous to sell them again, and only the third or fourth holder considered his title secure. On the same account, they were divided and sold in parcels. Napoleon's measures, in respect to the national domains created under him, are related in the article *Domains.* When Louis XVIII. published the constitutional charter, in 1814, he declared (in article 9). *Toutes les propriétés sont inviolables, sans aucune exception de celles qu'on appelle nationales, la loi ne mettant aucune différence entre elles.* The unsold national domains were, however, restored to the emigrants, and, as they claimed the entire restitution of their estates, all the national domains began to be considered insecure, so that at least three millions of proprietors felt their property in danger—a circumstance which had no little influence on the event of March 20, 1815. It was fortunate for France that the chamber of 1816, &c., and the ministry of Louis XVIII., recognised the rights of the holders of the national domains in the spirit of the charter. Since that time, the national domains have been separated from the crown lands, and the sale of the former has been permitted only in special cases, by particular laws; for instance, in order to pay the sum exacted by the allies, and to create an entailed estate for the duke De Richelieu. For the indemnification of the emigrants, see *Emigrants*, and *France*.

NATIONAL GALLERY. This splendid English collection comprises the greater part of the pictures which belonged to the late Mr Angerstein. They were purchased, by order of George IV., for forty thousand pounds, as the foundation of a national gallery, and were first exhibited to the public in May, 1824. Amongst them are the Village Festival, by Wilkie; *Marriage à la Mode*, by Hogarth; Christ raising Lazarus, by Sebastian del Piombo; the Woman taken in Adultery, by Rembrandt; Julius II. by Raphael; and beautiful specimens of Cuyp, Vandyck, Annibal Caracci, Claude, G. Poussin, Rubens, Titian, Coreggio, N. Poussin, Domenichino, and Velasquez.

NATIONAL GUARDS. See *Guards*.

NATIONAL INSTITUTE. See *Institute, National*.

NATIONS, LAW OF. By *national law*, or, as it is more commonly called, the *law of nations*, we understand that portion of public law which concerns the rights, duties, and obligations of nations. This is a very comprehensive subject, and can only be glanced at in this place, since a full and accurate examination would occupy volumes. Nations are considered as moral persons, having duties to perform, as well as rights to enforce, and are bound to the observance of the great principles of justice, which are applicable to the relations which subsist between each nation and its own subjects, and between each nation and every other nation. Vattel has defined the law of nations to be the science which teaches the rights subsisting between nations or states, and the obligations correspondent to those rights. But it is obvious that he here speaks of one branch only of that law, and that he altogether passes by another most important branch; namely, the rights and obligations which subsist between the nation and its own subjects. It would be more correct, therefore, to divide it into two great leading heads, namely, the *internal law of nations*, or that which arises from the relations between the sovereign and the people, and the *external law of nations*, or that which arises from the relations between different nations. The former may be properly called the *public law of the state*, whether it arise from the principles of natural justice, or from positive institution. The latter is appropriately called *international law*, and is again divisible into two heads, the one which regulates the rights, intercourse, and obligations of nations, as such, with each other; the other, which regulates the rights and obligations more immediately belonging to their respective subjects. Thus the rights and duties of ambassadors belong to that head which respects the nation in its sovereign capacity; and the rights of the subjects of one nation to property situated within the territory of another nation, belong to the latter head. The former is frequently denominated the *public law of nations*, and the latter the *private law of nations*. The great foundation on which the law of nations rests, is the law of nature, or that system of principles which is deduced by human reason from the nature of man, and his social obligations, for the direction and government of human societies. Not that every principle of natural law is applicable to nations, in the same way and manner as it is to individuals; but that nations, being moral persons, are bound by the same principles, so far as they admit of a just application to them. And among Christian nations, these principles are illustrated and enforced by the superior sanctions and doctrines of divine revelation. It is obvious, that the principles of natural law are not, of themselves, sufficient to regulate, in a fixed and definitive manner, all the complicated relations of society; for, in many cases, no rule is, or can be, furnished by human reason, which is, necessarily, the sole and true rule to govern them. There are many cases in which the rule is a matter of indifference, or of convenience, or of arbitrary regulation; and every nation is free to adopt or reject the rule which is framed by another. There are, again, other cases, in which a nation may justly yield up its own strict rights, or modify them, without any departure from the principles of justice, or moral obligation. The law of nations may, therefore, be divided into two great classes of principles, namely, those which arise from natural or universal law, and those which are of mere positive institution. The former is denominated the *universal law of nations;* the latter, the *positive law of nations*. And the latter is again divisible into the *customary law*, or that which arises from the silent consent of nations, as evidenced by general usages and customs, and habits of intercourse; and the *conventional law*, which arises from express compacts, or treaties between nations, or in a particular state, from the fundamental constitution of such state. We do not propose, in this place, to enter upon any theoretical investigation of the principles of the law of nations, but merely to present a practical summary of the most important of them. Our object is to furnish a guide to the actual state of this branch of public jurisprudence, rather than an exposition of the reasons on which it is founded. In considering this subject, it is our design to treat, first, of the internal law of nations, or that which concerns a nation considered by itself; and, secondly, the external law of nations, or that which concerns its intercourse and relations with other states.

1. *Nations considered in themselves.* When any society of men, or body politic, is united for the purposes of government, and for mutual protection, we are accustomed to call such society, or body politic, a *state*, or *nation*. To every state, or nation, we ascribe the attributes of sovereignty, independence, and equality with every other. Every nation which governs itself, without dependence upon any foreign power, is deemed a sovereign state. By *sovereignty*, is meant the absolute right to exercise supreme power, without any responsibility to any superior, except God. This is sovereignty, in its largest sense; and in this view it is despotic and uncontrollable. But it must not be understood that the possession of such an absolute, despotic sovereignty, is indispensable to the existence of a nation, or that it is ordinarily conferred, or proper to be conferred, upon its own functionaries. All that is meant is, that it is competent for the people composing any state, or nation, to exercise such power, or to confide it to their public functionaries; and the exercise of of it by either cannot, properly, be questioned by any foreign state or government. Theoretically speaking, this absolute sovereignty may be said to be inherent in every nation, as a potential attribute; but, practically speaking, it rarely has any existence, as an actual attribute, in the organization of any government. The forms of government are divisible into three sorts: democracies, or governments by the people; aristocracies, or governments of a select few; and monarchies, or governments of a single head; and each of these may be variously mixed up with the others, so as to form a complex government, such as a representative democracy, or republic, or a limited monarchy, or a limited aristocracy. In a pure despotism, indeed, all sovereign power is concentrated in the head; but such a government rarely exists; for, in governments usually styled despotic,

the customs and institutions of the society, and the habits, and manners, and opinions of the people generally, interpose some indirect checks, and compel the sovereign to yield a practical obedience to some limits prescribed to his prerogatives. If he does not, there is often an ultimate resort of popular or aristocratical power, which, by cutting him off, administers an effectual, though sanguinary remedy. In free governments, this despotic sovereignty is a mere residuary power in the people, if it can be said to have any positive existence at all. It never is confided to any public functionaries, except for transitory purposes; and it is contrary to the theoretical principles of such governments that it should be intrusted, as a permanent attribute, to the legislative, executive, or judicial departments. Nations, therefore, in a just sense, are deemed sovereign. not so much because they possess the absolute right to exercise, in their actual organization, such transcendent and despotic authority, but because whatever they do exercise is independent of and uncontrollable by any foreign nation. The sovereignty of many nations is, in its actual organization, limited by their own constitutions of government; but, in relation to all foreign states, the sovereignty is, nevertheless, complete and perfect. And a nation may even have a limited connexion with or dependence upon other nations, and yet retain a general sovereignty, in all other respects, and thus entitle itself to be deemed a sovereign nation, if it still possesses the power to govern itself by its own authority and laws. In respect to each other, then, nations possessed of sovereignty, in the limited sense above stated, are deemed equals; and are entitled to the same general rights and privileges. Relative strength is of no consequence; it neither confers nor abstracts any sovereign power. Relative weakness creates no dependence, and, in a just sense, compels to no sacrifice of national attributes. In respect to its own internal concerns, every nation possesses general and supreme authority. How that authority shall be exercised, and by whom, depends upon the particular constitution of each state, and is subject to the modification and control of the national will, expressed in such manner as the people prescribe. The authority of the nation over all its members is, by the very act of association, deemed, in all that concerns the general welfare of the nation, complete and supreme. All the members are bound to obedience and allegiance; and, in return, the nation is bound to protect and preserve its members.

It may be proper, however, to express the rights and duties of a nation in a more exact form than can be communicated in such general propositions. 1. Every nation possesses full jurisdiction to create, alter, abolish, and regulate its own form of government, in such a manner as to provide, from time to time, for its own safety and happiness. 2. Every nation possesses an exclusive jurisdiction, within its territory, over all persons and things therein. 3. Every nation possesses a right to demand the allegiance of all its own subjects, and to bind them by its own laws, whether they are at home or abroad. 4. Every nation has a right to the temporary allegiance and obedience of all persons who are strangers and foreigners, so long as they reside within its territorial limits. 5. Every nation has a right to exercise jurisdiction, in common with every other nation upon the high seas; and in all other places not exclusively belonging to some other nation. 6. Every nation has a right to enforce its own regulations upon its own subjects, and upon all other persons sailing under its flag and protection upon the high seas, and to govern its trade thereon, not interfering with the common rights of other nations. 7. Every nation has a right to hold all persons, born within its limits, and not specially exempted by the law of nations, to be its subjects, and bound thereto by natural allegiance. 8. Every nation has a right to naturalize foreigners residing within its territory, at its own pleasure; but such naturalization cannot impair or destroy the rights of other nations, to whom they may previously owe allegiance. 9. Every nation possesses a supreme legislative, executive, and judicial authority, and may confer such portion of these powers upon its public functionaries, for the purposes of its own safety, interest, and happiness, as it may deem proper. 10. Every nation has a right to acquire and hold property, as its own public domain, for public purposes. 11. The rights of persons, and the rights of property, within its territory, are subject to the control and regulation of every nation, according to its own constitution and laws. 12. The territory within the limits of every nation, not owned by any private persons, belongs to the nation in its sovereign capacity. 13. Every nation, in virtue of its eminent domain, has, in cases of necessity, and for the public safety and happiness, a right to dispose of any portion of the wealth or property of its subjects. 14. Every nation possesses the power, in virtue of its sovereignty, to punish all crimes committed against it, and to enforce all civil obligations due to it from the persons subjected to its authority. Such are some of the more important rights of sovereignty, belonging to nations.

We may now enumerate some of their duties. 1. Every nation is bound to protect the rights and possessions of its subjects against all aggressions. 2. Every nation is bound to prevent its subjects from doing any wrong or injustice to the subjects of other countries. 3. Every nation, in virtue of its obligation to preserve the peace, liberty, and happiness, of its own subjects, is bound to provide for the enactment of all good and wholesome laws for these purposes; and, especially, to provide for the necessities of the nation itself; to promote agriculture, commerce, manufactures, and all lawful pursuits, which are calculated to relieve the wants, promote the prosperity, or encourage the just enterprise of its subjects. 4. Every nation is bound to provide for the due and regular administration of justice; for the redress of wrongs; for the preservation of civil, political, and religious liberty; for the cultivation of piety and sound morals; for the suppression of vice; for public education and instruction; and for all other objects which are essential to the true interests and happiness of the people. Such, in a general view, are some of the more important duties of nations, in respect to their internal concerns.—It has been already stated that every nation possesses a right to all territory within its own limits, not belonging to private persons; and it may be added, that, as all such territory is held for the national benefit, it may be alienated, and disposed of, according to the will of the nation. All property, however acquired by the nation, is subject to the like disposition. Thus all the national revenues arising from taxation, or rents, or other income, or resources, may be applied as the nation deems proper for its own welfare. But there are many things which a nation holds for the public use and benefit, in respect to which all the subjects possess, or may possess, a common right of enjoyment. Thus rivers, lakes, and arms of the sea, within the limits of the territory of a nation, are possessed and owned by the nation, in virtue of its occupation of the adjacent country; and, until alienated, they are held for the common benefit of all the people, and may be used by all the people for the purpose of fishing and navigation. Of the like nature are roads, and highways, and canals established and supported at the expense of the nation. All these territorial rights and possessions, however, are subject to the municipal regulations of every nation, according to its own choice, and constitution of government.

2. *Of Nations, considered in Relation to each other.*—The basis, on which all the rights and duties of nations, in their intercourse with each other, rests, is the fundamental maxims, that they are all moral persons, and that each has a perfect equality, in sovereignty and social rights, with every other. They are treated as moral persons possessing a sense of right and wrong, and responsible to the common Creator for a just discharge of all the duties common to the human race. They are bound to do justice, to perform the offices of humanity, and to render mutual assistance to each other, in the same manner, and upon the same principles, that bind individuals to like duties. If there is any difference, nations are under a superior obligation to perform all social duties, because their means are more extensive, and their authority more complete, than those of individuals. Hence it is the duty of every nation to succour and assist another, that is suffering by famine, pestilence, or other calamity; to cultivate friendship and good-will towards all others; to abstain from all injury and wrong to all others; and to cherish, as far as may be, an honest and frank intercourse with all others, upon principles of reciprocal benevolence. However imperfectly these duties may, in a practical sense, be performed by nations, they are the clear result of undeniable principles of the law of nature, sanctioned and supported by the positive declarations of Christianity. The other maxim, to which we have alluded, is the perfect equality of nations, whether great or small, maritime or inland, strong or weak. In this respect, they are treated like individuals, who, however differing in capacity and strength, are deemed entitled to equal rights and privileges, in the general scale of the human race. In a just sense, then, all nations are of equal rank and dignity, although, by custom and usage, a precedency in mere matters of ceremony and courtesy is often conceded to nations which have a high antiquity, or superior renown, or uncommon power. The rights and duties of nations, in regard to each other, may be divided into two general heads,—those which belong to a state of peace, and those which belong to a state of war.

We shall first treat of those which belong to a state of peace. 1. Every nation is bound to abstain from all interference with the domain of other nations. That domain extends to every thing which a nation is in possession of by a just title, whether it be by purchase, or cession, or conquest, or by a title founded solely on a long possession. In respect to foreign nations, not only the public domain, but all the private property of the subjects of a nation, situated within its limits, is deemed the property of the nation. This right of domain is exclusive; and, consequently, no nation can rightfully exercise any jurisdiction or sovereignty within the territories of another, either over persons or things. If a nation chooses to leave some part of its territory desert and uncultivated, this does not justify any other nation in seizing upon or occupying it. But, where a desert territory has no owner, there the nation that first discovers or occupies it, is generally allowed to possess a just title to it. But if the territory, when discovered, is occupied by inhabitants, no just right exists to expel or to subdue them, upon any recognised principles of national law. Such inhabitants have just as good a title, founded upon possession, as can be claimed by any other people. 2. Where two nations border on a river, or lake, or arm of the sea, it often becomes a matter of dispute how far the limits of each extend, and how far either may exercise exclusive jurisdiction over such places. No principles can be laid down, which will embrace all cases of this sort. But as a nation may acquire exclusive dominion in a river, lake, or arm of the sea, some rules have been laid down as guides on this subject. When a nation takes possession of a country bounded by a river, it is considered as appropriating to itself the river also, if there is no adverse possession or appropriation. In such cases, a priority of possession or occupation is generally allowed to give the superior right. If a nation has long enjoyed the exclusive use of such river, lake, or arm of the sea, for navigation, fishing, &c., that is understood to strengthen its title of possession. If no priority of occupation is, or can be established, by either of two nations inhabiting the opposite banks of a river, each is considered as having an equal title; and, in such a case, the right of dominion of each will extend to the middle of the stream of the river (*usque ad filum aquæ*). Where a nation possesses the territory on both sides of a river, so far as such territory extends, it is deemed to be the owner of the river itself; but other nations, owning, in like manner, above or below, on the same river, may have a right of passage, or other servitude. In respect to the main sea, in former times, several nations laid claims to an exclusive dominion, or, at least, to a pre-eminence in and over certain parts of it. But the general doctrine now maintained is, that all nations have equal and common rights on the high sea, and they are not bound to admit any superiority there. The sea which washes the coast of a nation, to the extent of a cannon-shot, or a marine league, is now deemed to be a part of the territory of the nation, over which it may, for its own protection, exercise an exclusive jurisdiction. And, in respect to persons subjected to its laws, every nation now claims a right to exercise jurisdiction on the high seas, for the purpose of enforcing, not only the law of nations, but its own municipal regulations. 3. From the exclusive jurisdiction and sovereignty of a nation, within its domain, it follows, that no other nation has a right to punish for crimes committed by its own subjects therein. No foreign nation has a right to pursue any criminal, or fugitive from justice, therein; but its claim, if any, is a mere right to demand him from the nation itself. From this peculiar and exclusive jurisdiction, which a nation exercises within its own territory, over persons and things, other nations are accustomed, upon principles of comity and general convenience, to respect the decisions of the local tribunals, and to recognise the rights generally derived from them. It might otherwise happen that, with every change of domicil, the entire rights of property might be subjected to new litigation; and a judgment, valid where it was rendered, might be set aside by a tribunal having no competency to exercise an appellate jurisdiction. 4. Every nation has a right to regulate its own intercourse and commerce with other nations, not denying them just rights, in such a manner as is most conducive to its own prosperity and interests. It ought not, however, to restrict commerce, which is generally beneficial to all mankind, beyond what a just care of its own interests dictates. And it will not, if it be wise, impose any restrictions upon trade, which tend to a destruction of free commerce, or to create an unjust monopoly. In respect to its conduct towards foreigners, every nation seems under a moral obligation to treat them with respect, kindness, and humanity, during their sojourn within its territories. And though, strictly speaking, no foreigner has any right to claim a permanent domicil, or to exercise his trade or business within its territories, any interference with the ordinary pursuits of such persons is generally deemed a harsh exercise of power. And if a nation allows foreigners to enter into its territory, it is bound to respect their rights, so long as they conduct themselves peaceably; and if, in breach of good faith, it proceeds to punish them vindictively, when they have committed no offence, it is justly responsible for its conduct to the nation to which they belong. Foreigners, however, are bound to obey the laws of a country, as long as they reside within it, and under its protection. And as they are amenable to its laws, so they ought, in reason, to have the assistance of its courts of justice to vindicate their own rights. The property held by foreigners within a country, according to the laws, ought to be protected in the same manner as that of natives. It is a general rule among nations to regulate the descent, distribution, and alienation of immovable property exclusively by the laws of the country wherein it lies. As to movable property, it is now a common custom, and seems most reasonable and just, to allow foreigners the liberty of disposing of it by will, or otherwise, according to the laws of their own country, or of their own permanent domicil. Some governments, in the case of the death of foreigners within their territory, have exercised a very harsh right of appropriating the property left by such persons to themselves. But this exercise of right, or rather of power, has been generally discountenanced, in latter times, among civilized nations. The rights of foreigners are, however, so much a matter of municipal regulation and policy, that it is difficult to lay down more than a few very general principles on the subject. 5. How far a nation is bound to concede to others the exercise of any right, within its own territory, has been a matter of much speculation among writers on the law of nations. It has been often asked, whether a nation has a right to demand, in case of necessity, that another shall supply it with provisions, or allow it to procure necessaries therein; whether a nation may insist upon a right of passage through the territory of another nation, either for persons or merchandise; whether it may claim for its subjects a right to reside in the territories of another nation; whether it may, of right, demand from a nation the free use of a thing, within its territory, which is inexhaustible, and is of innocent use, such as of water. To all such questions there can be little more than a general reply, viz. that it is the duty of every nation to concede to the necessities of others whatever may not incommode itself, or affect its interests, or endanger its peace or prosperity. 6. The intercourse between nations can scarcely be beneficially carried on without the instrumentality of some public agents. They may have disputes to adjust, injuries to redress, rights to ascertain, mutual objects and interests to promote,—all of which may require great deliberation and many conferences. It is obviously impossible for the government of a nation to carry on its negotiations at a distance, without the aid of some public functionaries, who shall represent its sovereignty, and have authority to act in regard to its rights. Hence arises the right of every nation to send and to receive ambassadors, and other public ministers. And this right of embassy, inasmuch as its tendency is to promote justice, harmony, peace, and social virtue, among nations, has always been deemed peculiarly sacred. The law of ambassadors forms, therefore, a large head in the law of nations; and it is observed with a jealous and scrupulous care by all civilized nations. As representatives of the nation itself, ambassadors, and other public ministers, are exempted from all responsibility to the civil and criminal jurisdiction of the countries to which they are sent. Their persons are held sacred and inviolable. Their property, and servants, and retinue, enjoy a like privilege. Their houses are deemed, in some sort, asylums; and they have many privileges conceded to them, which do not belong to any other persons in the country where they reside. These rights, and privileges, and immunities, are not, however, to be considered as favours granted to the individual, but as a sovereign claim and public security insisted on by all nations, and refused by none. The peace and safety of all nations are essentially connected with the strict observance of them; and they are rarely infringed, except under circumstances of peculiar aggravation and injury. 7. It is through the medium of ambassadors, and other public ministers, that treaties, conventions, and other compacts between nations, are usually negotiated, thus forming a positive code for the regulation of their mutual rights, duties, and interests. In the modern practice of nations, such treaties and compacts are not generally deemed final and conclusive until they have been ratified by the respective governments to which the negotiators belong. When made, such treaties possess the highest sanctity and obligatory force. They are, indeed, sometimes violated; but they never can be justly violated, except in cases of great and positive wrongs on the side of the other contracting party, or from extreme necessity, or from a change of circumstances, which renders them wholly inapplicable or unjust. Many rules have been laid down for the interpretation of treaties. But they all resolve themselves, ultimately, into one great maxim, which is, that they are to be understood and construed according to their obvious meaning, and the intention of the contracting parties. Treaties may be dissolved in several ways;—first, by the voluntary assent of the parties; secondly, by a formal dissolution, pronounced by one of the parties, acting upon its own responsibility, in the exercise of sovereign authority; thirdly, by operation of law, as in cases where the contracting parties lose their distinct sovereignty, and become incorporated into a single nation; fourthly, by implication, as when new treaties are formed between the parties upon the same subject, or new alliances are contracted, which are incompatible with existing treaties. 8. As to the modes of terminating disputes between nations. These are various,—by compromise; by mediation, by arbitration; by conferences and congresses; by tacit acquiescences in the claims of the other side; and, lastly, on a failure of all these, by an ultimate resort to arms. This resort may be by a limited or by an unlimited warfare; by a limited warfare, as by retaliation, by reprisals, or other modified redress; by an unlimited warfare, as in cases of general hostilities in a public war. It is obvious, that a resort to arms can be properly had only when all peaceable means of redress have been exhausted, and for causes of an important nature.

And this leads us to the consideration of the rights and duties of nations in regard to each other, which belong to a state of war,—First, between the nations at war. The right of declaring war results from the right of a nation to preserve its own existence, its own liberties, and its own essential interests. In a state of nature, men have a right to employ force in self-defence; and, when they enter into society, this right is transferred to the government, and is an incident to sovereignty. 1. What are just causes for entering into a war, is a question which has been much discussed by publicists. It is difficult to lay down any general rules on the subject, and nations must be ultimately left to decide for themselves, when the exigency arises. In general, it may be said, that war ought not to be entered into, except for very cogent reasons, as it necessarily involves much personal suffering, and many private as well as public sacrifices. No man can look upon the conflicts of armies and navies, the pillage of cities, the devastation of provinces, and the destruction of property and of life, which it unavoidably involves, without feeling that a deep moral responsibility attaches upon the nation which undertakes it. Defensive wars are necessarily justifiable from the fact, that they involve the existence or safety of the nation and its interests. But offensive wars are of a very different character, and can be justified only in cases of aggravated wrongs, or vital injuries. 2. In respect to the mode of declaring war. It may be formal, as by a public declaration, or informal, as by actual hostilities. In modern times, nations are accustomed, generally, to make a public declaration, and to justify themselves before the world, by a manifesto of their reasons. 3. The effects of a declaration of war. The first effect is to put all the subjects of each of the nations in a state of hostility to each other. All public and all private social intercourse are suspended between them. They are not at liberty to engage in trade, or commerce, or contract with each other; and they retain the character of enemies, in whatever country they may be found. In the next place, all the property belonging to each is deemed hostile. If it be personal property, it may be captured as prize; if lands, it may be seized, and confiscated, at the pleasure of the sovereign; if it be merely in debts or stock, it may, in the extreme exercise of the laws of war, be equally liable to confiscation. In general, each nation restrains the right to make captures, and to carry on hostilities, to such persons as are in public employment, or to such as receive a public commission for this purpose. Mere private warfare is not allowed, except under many restrictions. Thus the usual modes of carrying on war are by armies, navies, and privateers, acting under the immediate authority of the government. 4. But, although the extreme rights of war are thus rigorous and oppressive, there seems no reason to exclude, even between enemies, the common duties of humanity. While the battle rages, indeed, every thing but slaughter and victory are forgotten. But, as soon as it is over, the conquerors are bound to treat the wounded with kindness, and the prisoners with a decent humanity. And they who knowingly offend, in these cases, are guilty of a gross violation of duty in the eyes of God and man. And there are some things which seem positively prohibited from their cruelty and brutal barbarity; such are the violation of female captives, the torturing of prisoners, the poisoning of wells, the use of inhuman instruments of war. 5. In time of war, there is occasionally an intercourse between the belligerents, which should always be held sacred. Thus the granting of passports, and ransom of prisoners and property; the interchange of prisoners by cartels; the temporary suspension of hostilities by truces; the passage of flags of truce; the engaging in treaties of capitulation, in cases of besieged armies or cities,—all these are matters which are held in great reverence, and demand the exercise of the utmost good faith. *A fortiori*, there should be a total absence of all fraud and stratagem, in cases where preliminary negotiations are entered into for the purpose of restoring peace. 6. In respect to captures made in war, they generally inure to the benefit of the sovereign, unless he has made some other positive distribution of them. When any conquest of territory is made, the inhabitants immediately pass under the dominion of the conqueror, and are subject to such laws as he chooses to impose upon them. Generally, it is for the interest, as it certainly is the common policy, of the conqueror to respect the rights of private persons and private property. But in strictness, his power over each is unlimited, unless so far as it may be restrained by articles of capitulation, or by moral or religious obligations. In cases of reconquest, the property, unless previously disposed of, returns to the original owner by the *jus postliminii*, in like manner as the restoration of a prisoner of war to his own country reinstates him in his prior rights. 7. There are also certain rights which war confers on the belligerents in respect to neutrals. Thus they have a right to blockade the ports, or besiege the cities, of their enemies, and to interdict all trade by neutrals with them. They have a right, also, to insist that neutrals shall conduct themselves with good faith, and abstain from all interference in the contest by supplying their enemy with things contraband of war. And if neutrals do so interfere, they have a right to punish them, either personally or by a confiscation of the property taken *in delicto*. And hence arises the incidental right of search of ships on the high seas, for the detection of contraband goods.

We next come to the consideration of the rights and duties of neutrals. A neutral nation is bound to observe entire impartiality between the belligerents. It is bound to consider the war just on each side, at least to assume it to be so, so far as regards its own conduct. It should do nothing, therefore, which favours one party at the expense of the other; although, if it has previously entered into treaties with one of them, by which it is bound to lend a limited aid, by supplying stores or troops, it is obliged to conform to its treaty obligations. This becomes often a duty full of peril and difficulty, and, in many instances, will involve the neutral in all the embarrassments of becoming a party to the war; for the other side has a right to treat such interferences as acts of hostility, although, if they are of a very limited extent, they are often silently tolerated. Neutral nations are, strictly speaking, bound to compel their subjects to abstain from every interference in the war, as by carrying contraband goods, serving in the hostile army, furnishing supplies, &c. In practice, however, in cases of contraband goods, the belligerents content themselves with exercising the right of confiscation; and the neutral nation submits to this as a just and fit remedy, without any complaint. Subject to the exceptions above referred to, a neutral has a right to insist upon carrying on its ordinary commerce, with each of the belligerents, in the same manner as it had been accustomed to do in times of peace. Whether it may carry on a trade with either belligerent in war, which is interdicted in peace, is a point which has given rise to very sharp controversy in modern times, and especially between Britain and America, the former contending for the restriction to the accustomed trade, the latter insisting upon also carrying on the unaccustomed trade. Whether a neutral nation is bound to allow a passage to the troops of either belligerent through its own territory. is a point often discussed. Strictly speaking, neither party has a right to insist on such a passage; and if it is granted to either, and materially affects the fortune of the war, it is almost always construed as an act of hostility to the other party, and is resented accordingly. A neutral nation has also a right to insist, that no hostilities shall be committed by the belligerents within its territorial limits. The persons and the property of enemies, which are within such limits, are deemed inviolable, and entitled to neutral protection. But the property of an enemy, found on board a neutral ship on the high seas, is deemed good prize, and *e converso* the property of a neutral, found on board of an enemy's ship, is deemed neutral. The reason for the difference is, that upon land the neutral sovereign has exclusive jurisdiction, within his own territory, over all persons and property within it. But all nations have a common jurisdiction on the high seas to enforce their rights, and the right of search carries with it an incidental jurisdiction over all enemy's property found therein, in the ships of a neutral. This right of search, however, is strictly confined to merchant ships, and is never extended to ships of war, belonging to the nation itself; for in such ships the national sovereignty is exclusive. In general, too, the character of neutral, or enemy, is decided by the fact of domicil. A native born subject of one belligerent, who resides in a neutral country, is treated, at least for the purposes of trade, as a neutral; and, on the other hand, a neutral subject, domiciled in an enemy's country, is treated, for the like purposes, as an enemy. In cases of civil war, the rights and duties of neutrals are not essentially different. Every neutral is bound to abstain from all active interference in the contest, on one side or the other. If the contest gives rise to the establishment of independent governments, formed out of the severance of the old empire, it is not deemed an act of hostility to recognise each as having a sovereign existence as a nation. But while the contest is dubious, and the affair wears the appearance of a mere private rebellion, such a recognition would be deemed an active interference to promote the civil war, and therefore would, or at least might, be resented as a departure from the neutral character.

Such is a very general outline of some of the more important principles which are recognised in the law of nations. To go into the details would require an entire treatise upon the law of prize, and another upon many complicated questions, growing out of international rights and duties in times of peace.

NATIVITY, in astrology; the theme or figure of the heavens, and particularly of the twelve houses, at the moment when a person was born; called, also, the *horoscope*. See *Horoscope*, and *Astrology*.

NATOLIA, or ANATOLIA, or ANADOLI; a province of Asiatic Turkey, bounded N. by the Black sea, E. by Armenia and Syria, S. by the Mediterranean, and W. by the Archipelago and the sea of Marmora; about 650 miles long, from E. to W., and 400 broad, from N. to S.; square miles, 270,000; population, 6,000,000. Within these limits are included not only Natolia Proper, but also Caramania, Roum, and Aladulia. The whole is divided, by the Turks, into six pachalics, viz. Natolia, Sivas, Trebisond, Konieh or Cogni, Marasch, and Adana. The capital of Natolia Proper is Kintajah; the principal seaport, Smyrna; the other principal towns are Bursa, Angora, Sinob, Guzel-Hisar Aphiom-Karahisar, and Ismid. It is divided into seventeen *sangiacats*. Natolia was anciently called *Asia Minor*, which comprised ancient Bithynia, Paphlagonia, Galatia, Phrygia, Mysia, Æolia, Ionia, Lydia, Caria, Doris, Pysidia, Licia, and Pamphylia. (*See the articles.*) The soil is in general fertile, producing corn, tobacco, and fruits of various kinds, cotton and silk; and, notwithstanding the indolence of the Turks, the commerce is considerable, particularly in carpets, leather, drugs, cotton, silk, and other articles of manufacture and produce. The greater part of the inhabitants are Mohammedans; but there are many Christians, principally of the Greek church, governed by patriarchs, archbishops, and bishops, who are tolerated by the Porte. There are, likewise, many Armenians, and some Roman Catholics. See *Ottoman Empire*.

NATROLITE. See *Zeolite*.

NATRON; a salt which is found in the ashes of several marine plants; in some lakes, as in the Natron lakes of Egypt; and in some mineral springs, &c. See *Soda*.

NATURAL BRIDGE, in Rockbridge county, Virginia. This bridge, which is over Cedar creek, is a great curiosity. Its dimensions are vast; its appearance lofty, grand, and even awful. It stands on the ascent of a hill, which, according to the opinion of some persons, has been cloven by some great convulsion; but according to the opinion of others the chasm has been worn by the action of the water. The fissure, at the bridge, is 250 feet deep, forty-five wide at the bottom, and ninety at the top. The rock, which forms the bridge, is sixty feet broad in the middle, and is covered with earth and trees. Here is a post-office; fourteen miles S. W. of Lexington, and 180 W. of Richmond.

NATURAL HISTORY is the description of all bodies belonging to nature, in one of the narrow senses of the word *nature*, in which it is confined to the visible objects of this earth, including, of course, the phenomena of their growth and formation. The systems of the different kingdoms of nature will be found under their respective heads; and our limits do not permit us to give here an account of the general systems which have attempted to classify all the phenomena of created objects. Generally speaking, only the external description of the objects of nature is comprised in natural history, and chemistry and natural philosophy are excluded, leaving only four chief divisions: 1. geology, or mineralogy in its most extensive sense; 2. phytology, or botany (the natural history of plants); 3. zoology (description of animals); and, 4. anthropology (the natural history of man). Another division has been made, by German naturalists, with reference to the form of bodies, their composition, and their functions (if they are endowed with life), which gives rise to the three departments of morphology, chemistry, and biology or physiology. Aristotle is to be regarded as the founder of natural history. (See *Aristotle*.) Of the Romans, Pliny the Elder deserves to be particularly mentioned. He left a collection of notices respecting natural history, though deformed by a mass of incorrect observations and fabulous reports. In the darkness which the middle ages spread over the West, the natural sciences suffered severely; nature was dealt with in a most barbarous and absurd manner by the schoolmen. With the revival of learning a new day dawned on natural history; Bacon led the way to closer observation, and much was done, in the last century, by Conrad Gesner in Zurich, Aldrovandi at Bologna, Ray in England, Tournefort in France, and others; but Linnæus first collected and systematized the treasures of natural science. He gave us the first system of nature; and though it is an artificial system, and not founded in nature itself, he has done more for natural history than almost any man for any other branch of knowledge. Since his time, natural history has been cultivated with the greatest zeal in Germany, Britain, France, Sweden, Russia, and of late in the United States. Buffon did much for this science, by the splendid style in which he taught it. The desire to treat natural history according to a natural system, not only in single branches, like botany, but, if possible, in its whole range, became more and more general. Oken has occupied himself with the latter task particularly, and given to the public several results of his labour. The number of works, in the various departments of natural history, is very great. Bohmer's *Bibliotheca Scriptorum Hist. natural.* (Leipsic, 1785 et seq., in 5 parts, 10 vols.), gives those which appeared before the beginning of this century, when a very interesting period commences. A complete view of the present state of this science may be found in Cuvier's *Dictionnaire des Sciences Naturelles*, which has been publishing, since 1816, in Paris, in large 4to. Among the manuals on natural history, Blumenbach's *Naturgeschichte* is one of the most distinguished. Not unworthy to be mentioned here is the *Naturhistorischer Atlas*, by Goldfuss (Düsseldorf, 1824).

NATURALISTS, ASSOCIATION OF GERMAN PHYSICIANS AND. Natural philosophy and natural history are studies very extensively cultivated in Germany, by men who devote themselves particularly to the scientific pursuit of these studies, as well as by physicians, &c.; and it was thought that an annual meeting, which might assemble many of the persons thus engaged, would have the most beneficial influence on the progress of science, by the free interchange of their ideas and discoveries, and the mutual stimulus which they would afford each other, besides the benefit which those from a distance would derive from visiting the various museums and libraries. Professor Oken proposed, accordingly, a plan of such a society, which actually went into operation in 1822, and has repeated its annual meetings, each time in a different city, alternately in Southern and Northern Germany, ever since, with the most successful results. The society was established September 18, 1822. Its meetings are always in autumn, and do not last longer than a week. Every author of a work on natural philosophy or medicine is considered a member; inaugural dissertations, however, are not considered as scientific works for this purpose. No election of members takes place. Whoever attends is a member for the time. Meetings are always with open doors, and begin September 18. The members are divided into classes, who meet by themselves, in addition to the general meetings. Each year a president and secretary (the only officers) are chosen for the next year. The association makes no assessment, and holds no property except its records. The expenses of the meeting are defrayed by the members present. Men of science from almost all parts of Europe have attended the last meetings, and, in 1829, when it was at Heidelberg, an invitation was received from the baron De Ferussac, in Paris, requesting this association to cooperate with the society who carry on the Universal Bulletin, in Paris. See a more minute account of this society in No. LXVII. of the North American Review, with a translation of its constitution.

NATURALIZATION. See *Alien*.

NATURAL LAW, or, as it is commonly called, the *law of nature*, is that system of principles, which human reason has discovered to regulate the conduct of man in all his various relations. Doctor Paley defines it to be the science, which teaches men their duty and the reasons of it. In its largest sense, it comprehends natural theology, moral philosophy, and political philosophy; in other words, it comprehends man's duties to God, to himself, to other men, and as a member of political society. The obligatory force of the law of nature upon man is derived from its presumed coincidence with the will of his Creator. God has fashioned man according to his own good pleasure, and has fixed the laws of his being, and determined his powers and faculties. He has the supreme right to prescribe the rules, by which man shall regulate his conduct, and the means, by which he shall obtain happiness and avoid misery. He has given to man the power of discerning between good and evil, and a liberty of choice in the use of those means, which lead to happiness or misery. The whole duty of man therefore consists in two things: first, in making constant efforts to ascertain what is the will of God; and, secondly, in obedience to that will when ascertained. For the purposes of the present article, we shall assume, without undertaking to prove, that there is a God of infinite power, knowledge, wisdom, benevolence, justice, and mercy; that he has created man with suitable powers and faculties to pursue and obtain happiness; that man is a moral, dependent, and accountable being; that his soul is immortal; that his ultimate happiness or misery is dependent upon his own conduct; that there is a future state of retribution, in which the inequalities of the present life will be adjusted according to supreme wisdom and goodness; that, by a right application of his powers and faculties, man may always discern and pursue his duty; that virtue, or doing good to mankind in obedience to the will of God, has attached to it the reward of everlasting happiness; and that vice, or doing wrong in disobedience to that will, is, by the very constitution of man's nature, necessarily connected with suffering and misery, directly or ultimately. In short, that man cannot be permanently happy by the practice of vice, and must be permanently happy by the practice of virtue. We shall assume these propositions, not because they are not susceptible of complete proof, but because, not being intended to be discussed in this place, they nevertheless form the basis of the subsequent remarks.

From the moral government of God, and the moral capacity and accountability of man, we deduce his general rights and duties. 1. His duties towards God. In the just performance of these duties consists piety or devotion. In a large sense, indeed, every performance of our duty is but a performance of some duty towards God; since it is his will which makes it a duty. But in the restrained sense, in which we are accustomed to use the phrase, we refer it to those duties of which God is peculiarly the object. As he is our Creator, we owe him supreme worship and reverence; as he is our Benefactor, we owe him constant gratitude and thankfulness; as he is our Lawgiver and Judge, we owe an unreserved obedience to his commands. We are frail and dependent beings, and we have constant reason to implore his assistance, his mercy and his forgiveness. Hence arises the duty of prayer, as a solemn recognition of our dependence on God; as a means of religious improvement and of cultivating devout affections; as an effectual instrument of communing with our own hearts; as a source of consolation under the afflictions of life; and as an exercise of piety fitted to give a spiritual elevation to our thoughts, and a livelier and more enduring sense of our duty. From the same causes also flow the duty of public and social worship; of maintaining religious institutions; of aiding in the diffusion of religious knowledge; and of keeping in view, in all our words and actions, an habitual and reverential fear of God. —2. The duties of man towards himself, or those which terminate in himself. Among these we may enumerate the duty of personal holiness; of self-preservation; of temperance; of humility; of personal improvement in knowledge, wisdom, and virtue; and of preserving a conscience void of offence towards God and towards man.—3. The duties of man towards other men, or what are called his *relative* duties, arising from the various relations, which he sustains or may sustain towards others.—Now these duties flow from the correspondent rights of others. And this leads us to the consideration of the different sorts of rights. Rights are usually divided into such as are natural or adventitious, alienable or inalienable, perfect or imperfect. We call those rights *natural*, which belong to all mankind, and result from our very nature and condition; such are a man's right to his life, limbs, and liberty, to the produce of his personal labour, at least to the extent of his present wants, and to the use, in common with the rest of mankind, of air, light, water, and the common means of subsistence. *Adventitious* rights are those, which are accidental, or arise from peculiar situations and relations, and presuppose some act of man, from which they spring; such as the rights of a magistrate, of a judge, of electors, of representatives, of legislators, &c. We call those rights *alienable*, which may be transferred, by law, to others, such as the right to property, to debts, houses, lands, and money. We call those rights *unalienable*, which are incapable, by law, of such transfer, such as the right to life, liberty, and the enjoyment of happiness. We call those rights *perfect*, which are determinate, and which may be asserted by force, or in civil society by the operation of law; and *imperfect*, those which are indeterminate and vague, and which may not be asserted by force or by law, but are obligatory only upon the consciences of parties. Thus a man has a perfect right to his life, to his personal liberty, and to his property; and he may by force assert and vindicate those rights against every aggressor. But he has but an imperfect right to gratitude for favours bestowed on others, or to charity, if he is in want, or to the affection of others, even if he is truly deserving of it. It is difficult to make any exact enumeration of what may be deemed the general rights of mankind, which may not admit of some exceptions, or which may not be deemed capable of modification under peculiar circumstances. Thus the most general rights, which belong to all mankind, may be said to be the right to life, to liberty, to property, and to the use of air, light, water, and to the fruits of the earth. And yet, under certain circumstances, life, and liberty, and property, may justly be taken away; as, for instance, in order to prevent crimes, to enforce the rights of other persons, or to secure the safety and happiness of society. And in like manner the free use of air, light, and water, may be interdicted.—In regard to imperfect rights, although the sanction is wholly upon the conscience of the party under a sense of religious responsibility, the obligation to perform the duties corresponding to them is, nevertheless, to be deemed as imperative, as if they also possessed the strongest earthly sanctions; since they arise from the commands of God, and are to be done in obedience to his will. Every man is, therefore, bound to exercise charity in its largest sense; to be just, grateful, kind, and benevolent; to promote the general happiness; to speak the truth, and to abstain from falsehood; to abstain from oppression, anger, revenge, hatred, malice, slander, uncharitableness, persecution, and every other injurious act or passion. These are duties, which are incumbent on him in respect to all the human race. There are others, again, which arise from peculiar relations to others; such are those, which belong to him in the character of master or servant, magistrate or subject, parent or child, husband or wife. Among the duties of masters and servants, we may enumerate, on the part of the master, the duty to enjoin on servants no unnecessary labour or confinement, from caprice, or wantonness, or passion; to insult no servants by harsh, opprobrious, or scornful language; to refuse them no harmless pleasures; to promote their welfare by all reasonable means. On the part of servants, the duty to be industrious, and punctual in the discharge of their duty, faithful and honest; and to yield a ready obedience to all just commands. On the part of magistrates, the duty of exercising power with moderation and mercy as well as justice. On the part of subjects, the duty of obeying the laws and supporting the institutions of society. On the part of parents, the duty of maintaining, educating, and otherwise providing for the intellectual, moral, and physical improvement of their children. On the part of children, the duty to render their parents a just homage, love, and reverence, to obey their commands, to lighten their labours, assuage their sorrows, and, as far as may be in their power, to administer to their infirmities, and to support and succour them when in poverty. On the part of husband and wife, the duty to promote domestic peace and harmony; to cultivate mutual love and forbearance; and in prosperity and in adversity, in sickness and in health, in life and in death, to be true, and watchful, and tender, as those whom God has united in bonds of permanent obligation and sanctity. And this leads us to the consideration of the subject of marriage, and some of the rights and duties flowing from it. Marriage is an institution, which may properly be deemed to arise from the law of nature. It promotes the private comfort of both parties, and especially of the female sex. It tends to the procreation of the greatest number of healthy citizens, and to their proper maintenance and education. It secures the peace of society, by cutting off a great source of contention, by assigning to one man the exclusive right to one woman. It promotes the cause of sound morals, by cultivating domestic affections and virtues. It distributes the whole of society into families, and creates a permanent union of interests, and a mutual guardianship of the same. It binds children together by indissoluble ties, and adds new securities to the good order of society, by connecting the happiness of the whole family with the good behaviour of all. It furnishes additional motives for honesty industry and economy in private life, and for a deeper love of the country of our birth. It has, in short, a deep foundation in all our best interests, feelings, sentiments, and even sensual propensities; and in whatever country it has been introduced, it has always been adhered to with an unfailing and increasing attachment. Polygamy, on the other hand, seems utterly repugnant to the law of nature. It necessarily weakens, and, in most cases, destroys the principal benefits and good influences resulting from marriage. It generates contests and jealousies among wives; divides the affections of parents; introduces and perpetuates a voluptuous caprice. It has a tendency to dissolve the vigour of the intellectual faculties, and to produce languor and indolence. It stimulates the sensual appetites to an undue extent, and thus impairs the strength and healthiness of the physical functions. It debases the female sex. It retards, rather than advances, a healthy and numerous population. It weakens the motives to female chastity, and to exclusive devotion to one husband. Besides; the very equality in point of numbers of the sexes, seems to point out the law of God to be, that one woman shall be assigned to one man. And in point of fact, the countries, where polygamy has been allowed, have been uniformly debased, indolent, and enervate, having neither great physical, nor great intellectual ability. If marriage be an institution derived from the law of nature, then, whatever has a natural tendency to discourage it, or to destroy its value, is by the same law prohibited. Hence we may deduce the criminality of fornication, incest, adultery, seduction, and other lewdness; although there are many independent grounds, on which such criminality may be rested. It follows that the right of divorce must be a very limited right; and that divorces are forbidden by the law of nature, except for causes of a very extraordinary character. It is manifest, that a power on either side to dissolve the marriage at will, would rob the state of matrimony of many of its principal blessings and advantages. It would deprive one of the parents of the comfort and gratitude of the children of the marriage. It would defeat the main purposes of their union, and weaken all domestic ties between parents and children. On the other hand, a very restricted allowance of divorces has a natural tendency to preserve peace and concord in families, by perpetuating a common interest, and encouraging mutual forbearance and affection. By denying, except for extraordinary reasons, the right of divorce, we discourage, in a proportionate degree, the desire, as well as the means of accomplishing it. Christianity has confined the right of divorce to the single case of adultery; though the law of nature may perhaps be thought to justify some few other exceptions.—4. We next come to the duties of man as a member of political society. And, here, we shall briefly treat of certain rights and duties, which may arise from the law of nature independent of any organization into political societies, but which more naturally find a place here, because they constitute the principal grounds for such organization. Thus the right of property, the obligation of contracts, the duty of speaking the truth, the sanctity of oaths, with other corresponding duties, strictly speaking, may be perfect in a mere state of nature, without the recognition of any fixed society; for they may exist and have a necessary application independent of such society. But their value and importance are far more felt, and far better provided for, in political society, and, therefore, properly belong to the present head.

1. The origin of political society.—The origin of political society may be traced back to the primitive establishment of families. From the union of a number of related families grew up tribes; and from tribes gradually grew up colonies and nations. Accidental associations for offence or defence may, in some instances, have introduced the first elements of fixed society between strangers; and a sense of mutual interest and mutual dependence may have rendered them permanent. Coeval with the establishment of civil societies was the origin of civil government. Parents, from necessity as well as from prudence, exercised, and were admitted rightfully to exercise, immediate authority and government over their children and families. The patriarch or chief of a tribe, in like manner, exercised authority over those, who were of his blood and lineage. And, silently, the powers of rule or government were either divided as convenience or accident dictated, or were retained by the head, as the common bond of the union of the whole. Sometimes, indeed, government did or might arise from military associations for plunder or protection. And in such cases the strongest, the most intelligent, and the most enterprising and valiant, were the most likely, in the first instance, to be intrusted with the highest powers. The necessity, in all such cases, of prompt submission and obedience, in order to accomplish the immediate objects in view, furnished a sufficient excuse, if not just reason, for intrusting the leaders with summary and despotic authority.

2. Governments, then, may be properly deemed to arise from voluntary consent, or from long acquiescence and prescription, or from superior force. The fundamental objects of all civil governments are, or ought to be, to promote the welfare and safety of the whole society. It is obvious, that no single individual can protect himself to the same extent, or by the same means, as an organized society or government can protect him. The latter has the powers, authority, union, and resources of numbers. Men enter, then, into civil societies for the protection of their persons, and personal rights and property. In a state of nature, if either be invaded, the only redress is by the application of positive force by the individual who is injured. But under the establishment of civil governments, the redress is taken from the individual, and is administered by the government itself through its own functionaries, and according to its regulations, and by the authority and force of numbers. The entering into civil society, therefore, necessarily, or, at least, naturally, induces the surrender of all those private rights, which are indispensable for the good order, peace, and safety of the whole society. And, indeed, unless some surrender of powers and rights were made, there could be no such thing as a regular government, since each person would be at liberty to do as he pleased, and there could be no such thing as lawful authority on one side to give a rule, or, on the other side, any duty of obedience. Civil government, then, may be properly said to consist in the exercise of such delegated powers, as are proper or necessary for the safety, protection, and happiness of the whole community. And civil liberty may be said to consist in not being restrained by any laws, which are not conducive to the public welfare. We sometimes see governments existing, in which these objects are but imperfectly obtained, and ask ourselves, why they are not changed. There are several reasons, which may help us to a just understanding of the facts, and enable us satisfactorily to solve the inquiry, how it should happen, that governments should fail of attaining the very objects, on which they are founded, and yet be supported by the acquiescence of the people. In the first place, in every government, there are many persons, who obey from mere prejudice, or the habit of obedience, and from an inherent indisposition to contemplate any thing otherwise than as it at present exists. They do not stop to consider, whether it can be made better or not. They are content, from a *vis inertiæ*, to let things remain as they are. In the next place, those whose obedience is governed by reason, are often persuaded to obedience by the consciousness of their own inability to procure suitable changes; by the dread of civil commotions; by doubts as to the method of curing existing evils; and by the persuasion, that in many instances the form of government has become so interwoven with the habits and institutions of the people, that as much mischief as good might be done by a change. In the next place, in every government, many persons have a direct and positive interest in preserving the government as it is, and even in perpetuating its very corruptions. They may be a favoured class, enjoying peculiar privileges, ranks, or patronage; they may have their whole property and importance involved in the existence of the present state of things. In the next place, the actual moral and intellectual power, and even physical power, of the state in its present organization, may be so combined in the structure of the government, that they may present insuperable barriers to any change. If, for instance, the whole of the privileged classes should happen to be the only educated persons in the nation; if the whole priesthood should depend upon the government for its influence and support, and its exclusive patronage and privileges; if the whole wealth of the community should be lodged in few hands, and those few should be the very heads of the government; if the military power should be so organized, that it could scarcely find the means, or possess the power, to act except under the existing arrangements;—in any, and in all of these cases, it is easy to perceive, that there would be immense difficulties in introducing any fundamental and salutary change. It could scarcely take place but upon some general convulsion, which should break asunder all the common ties of society. But it may be asked, as civil government is formed by the whole people, whether it can ever be justly altered, except by the will of the whole. If by the will of the whole be meant the will of each individual singly, it may be answered in

the affirmative; for by entering into society, men necessarily engage to be governed by the will of the majority, since unanimity in all matters of civil polity is impracticable. The will of the majority or the will of the minority must govern. If the latter, by a veto, can stop all measures, the majority are governed by them. All reasoning and all principle, therefore, unavoidably lead to the result, that the will of the majority must be deemed the will of the whole for all practical purposes; and as the interests of the whole society require this, it is binding on every part of it.

3. The origin of property. One of the great objects of political society is the protection of property; and many learned discussions have taken place as to the origin and nature of property. Some things are of common and universal use by all mankind, and to such use all mankind have an equal right. Such, generally speaking, are (as we have seen) air, water, and light. Other things belong, exclusively, to one or more persons, and no others have a right to intermeddle with, possess, or enjoy them. Such an exclusive right in things is called *property*. How did such a right originate? It is plain, that, in a mere state of nature, no man could insist, that he possessed any such exclusive right to things in general; for, if one possessed it, all would equally possess it, which would be the same as to affirm its non-existence. The earth, and its various fruits, herbage, and trees; the various inferior animals, such as birds, fishes, and beasts, either for food, or covering, or pleasure, or labour, seem alike to belong to all mankind, and are for the use of all. To a limited extent, possession and use of a thing must, indeed, confer a temporary or permanent ownership. If, for instance, a man stands or lies on a particular spot of ground, during the time of such occupation, he must have the exclusive right of occupation, for it is indispensable for his immediate use, and no other person can show a better right to it. So if he gathers fruit, for the purpose of eating it, no other person can have a better right to eat it than himself; and he must, therefore, have an exclusive right, because it is necessary to the use. But if he does not hold the fruit to eat it at present, but lays it aside for future consumption, his right to the exclusive use of it is not so clear; it is somewhat more remote; it does not turn upon immediate possession, and immediate use. It may be said, that he has, by his labour, gathered it, and therefore he has a superior title to it. But, though his labour is his own, it does not follow, that, because he bestows it upon another thing, he thereby acquires any exclusive ownership in that thing. It may be extremely inconvenient, and, perhaps, even injurious to the common claims of others, that he should so bestow his labour upon it. They are not, therefore, bound to respect any claim founded upon such labour. Some persons found the right of property upon a presumed or tacit consent of all mankind, which is a mere theory, and wholly unsupported by any universal facts. Others found it upon mere occupancy; but that, at most, gives only a present and temporary right, during such occupancy. Others, again, found it upon the very equality of all mankind, and contend that, as God has given all things for the use and necessities of all, each may appropriate to himself whatever is proper to satisfy those necessities. But, even here, he must leave sufficient to satisfy the necessities of others; and they may take, of the stores so appropriated, enough to supply their own necessities. The truth, however, seems to be, that, in a state of nature, each man actually appropriates to himself whatever he desires, and can get; and he then holds it by the title of the strongest; and no other person respects his title any longer than it can be so maintained, though no one can show a better title to it. As soon as families are formed, the necessity of providing for their own mutual comforts and wants, gradually leads them to hoard up and appropriate food, and other things for future use. The convenience, and, sometimes, the necessity of an interchange of commodities with other families, of which each has a superfluity, leads to an increased accumulation. Possession and power are the guardians of these gathered stores; and a sense of convenience and mutual interest induces every family to regard with respect the commodities in possession of the other. Thus the first rudiments of exclusive property begin in the fact of actual possession and power, and the title gains strength and permanence from a sense of the beneficial results to the interests of all the neighbourhood, and, ultimately, to the whole society, with which each family and tribe are connected. The advantages of the admission of such an exclusive right are soon felt by all reflecting minds, and gradually prepare the way for a more solemn recognition of it. It is perceived, that its tendency is to increase the products of the earth, by creating inducements to plant, when the planter is secured in his exclusive right to the harvest. It also improves the comforts and conveniences of life, and introduces a fit distribution of labour; and it cuts off a great source of perpetual contest and warfare among those, who would, otherwise, be struggling for the common prize. In the ordinary course of things, movables, such as fruits, and flocks, and herds, and fishes, first become property. Land rarely becomes permanent property until a much later period in the history of nations.

4. But, whatever may be the origin of the right to property, it is very certain, that, as it is now recognised and enforced, it is a creature of civil government. Whatever right a man may have to property, it does not follow, that he has a right to transfer that right to another, or to transmit it, at his decease, to his children or heirs. The nature and extent of his ownership; the modes in which he may dispose of it; the course of descent, and distribution of it upon his death; and the remedies for the redress of any violation of it, are, in a great measure, if not altogether, the result of the positive institutions of society. Accordingly, we find that, in different nations, all these subjects are regulated in very different manners. In some nations, all the children inherit the property, upon the death of the ancestor; in others, the eldest son only. In some, there is power to dispose of the whole, or of a part only, by will and testament; in others, this power has been denied. In some, the duration of the right of property is perpetual; in others, it is limited. In some, it may be alienated at all times, and in perpetuity; in others, the power of alienation is restrained. In some, long possession confers title; in others, it confers none. Above all, the capacity to dispose of property is variously regulated by civil institutions. It is obvious, that idiots, and madmen, and infants, ought not to be allowed to dispose of property, since they have no rational discretion. But at what period of life shall a man be deemed to possess such discretion? At ten, or twenty, or thirty years of age? Shall it equally apply, at all times, to both sexes, under all changes of condition? In all nations, some peculiar regulations have been adopted to settle these questions, which, by the law of nature, it would not be easy to settle by any uniform and fixed rule. The power of disposing of property is sometimes allowed at eighteen, sometimes at twenty-one, sometimes at twenty-five, and sometimes at thirty years of age. It is sometimes permitted to married women, but it is more commonly denied to them. Who can say,

which of these periods is the true one, or which of these privileges is the proper one?

5. Another great object of society is the protection, not only of property in *things*, but of property (if we may so say) in *actions*. A great portion of the business of human society is founded upon contracts, express or implied; and these contracts, especially in modern times, constitute the bulk of the fortunes and acquisitions of many persons, from the humblest mechanic up to the most opulent stockholder. The obligation of contracts, or, in other words, the duty of performing them, may, indeed, be deduced from the plainest elements of natural law,—that is, if such contracts are just and moral, and founded upon mutuality of consideration. It is indispensable to the social intercourse of mankind. It is conformable to the will of God, which requires all men to deal with good faith, and truth, and sincerity, in their intercourse with others. It is indispensable, in order to prevent injuries to others, whose acts, and interests, and property, may depend upon a strict fulfilment of such contracts. But, in a state of nature, the obligation of contracts, however perfect in itself, cannot ordinarily be enforced upon the other contracting party to its just extent. The only remedy is positive force; and this, in many cases, is impracticable, and is generally inconvenient. The institution of political society brings the moral, as well as the physical power of the whole in aid of the natural obligation of contracts. The remedy is generally peaceable, perfect, and easy. But it may be naturally asked, what contracts are really obligatory. The true answer, in civil societies, is, all such contracts as the law of the land declares to be obligatory, or of which it permits the obligation to be enforced. The true answer, independent of the positive recognitions of civil society, is, all such contracts as are moral, just, practicable, and have not been extinguished in any lawful manner. Contracts which are immoral, or which have resulted from fraud or oppression; contracts which require impossible things, or are repugnant to natural justice; or which are founded in essential mistakes, as to persons, characters, or things; or which involve the breach of other paramount obligations, cannot, upon the principles of eternal justice, be obligatory.

6. Without going more at large into the origin and objects of political society, it will be seen, that these objects require the delegation (as has been already intimated) of certain powers and authorities to those, who are to administer the government. The ends required are the preservation of the general rights and the general welfare of the community; and the means to accomplish these ends must be given by the express or implied assent of the government. The civil powers, which, in every well constituted society, seem indispensable for this purpose, are the legislative, executive, and judicial powers. In order to secure the safety and happiness of the society, it is indispensable, that there should be somewhere lodged a power to make laws for the punishment of wrongs, and for the protection of rights, and for the promotion of the peace, health, and good order of the society. And, as there is a perpetual change in human affairs, and laws and institutions, which are adapted to one age, are frequently unfit for another, there must exist in the government a power to alter, amend, and modify existing laws;—and, as human legislation must necessarily be imperfect, the power to improve it may always be presumed to be useful, since experience often points out mistakes and deficiencies. The power of legislation must, therefore, in its nature, include the power of abolishing, as well as of enacting laws. Again, as the exigencies of the society must require expenses to be incurred, and revenues to be raised to defray those expenses, the power of taxation naturally belongs to the power of legislation, as a means to accomplish the appropriate ends of society. But, if laws exist, they soon become a dead letter, unless obedience to them can be enforced; for it is found that moral obligation alone is not sufficient to insure a perfect performance of duty. The existence of an executive authority, to which is intrusted the due and vigilant execution of the laws, seems indispensable. And, as controversies may arise, in a great variety of cases, as to what is the right of one party, and the duty of another; whether property belongs to one party, or to another; whether a contract has or has not been performed; whether a wrong has or has not been done; whether a crime has or has not been committed,—it seems also indispensable, that a power should exist, whose jurisdiction should extend over all controversies of this sort, and should finally decide upon them. This power is the judicial power; and its free, independent, and honest exercise is as important to the safety and happiness of society, as either of the other two. In short, without a due administration of civil and criminal justice, society is, and can be, of little value. The merit of every government must, therefore, be subjected to this, as the truest test of its real excellence.

7. In what manner these various powers, legislative, executive, and judicial, are to be exercised, and to what functionaries they are to be intrusted, depends upon the particular organization of each society or nation, or what is usually called its form or constitution of government. Where the society is small, and within a very limited extent of territory, it is possible to have them all exercised in an assembly of the whole people by the whole people. This would be a pure democracy. But it is obvious, that though possible, in an exact sense it is scarcely practicable; for all the people of even a small territory can rarely be assembled; some will be absent from accidental circumstances of illness, and age, and more pressing duties. And, probably, in no society whatever were these powers ever, in fact, exercised by the whole people, in any single assembly; for idiots, madmen, infants, have been universally excluded; and married women, and persons guilty of crimes, have been usually excluded. The most simple form, in which the powers of government have ever been actually administered, probably is by a majority of that part of the people, which has actually been assembled for such a purpose. And this is, in fact, though in its humblest form, a delegation of the sovereign power of the whole, since it intrusts the authority of the whole to the part, which is assembled. It is also, though in its humblest form, a *representative* government; for the whole are represented by those, who are present. We ordinarily call such a government a *democracy*, or government of the whole people. But in societies, which are composed of large masses of population, such a form of government is unwieldy, and burthensome, and inefficient. The people, are, therefore, driven to a delegation of their authority to a smaller number of persons, who can act as their representatives in the discharge of the legislative, executive, and judicial functions. Sometimes all these powers are concentred in a single person; and then the government assumes the form of a pure despotism; sometimes they are all exercised by one and the same select body, composed of a few select persons, and then the government is, in form, a pure aristocracy. Sometimes the powers are divided, and distributed among various functionaries, and then the government becomes a mixed form of government. If the executive power, in such a case, is delegated to a single

person, it is then called a *monarchy*, or a *limited monarchy*. If the executive power is exercised by a select body of men, it is called an *aristocracy* or *limited aristocracy*. If the executive power is exercised by a magistrate elected by the people from time to time, and removable by the people, it is sometimes, though not, perhaps, with perfect accuracy, called a *republic*, or a *limited republic*. If, in a monarchy, the power of legislation is shared by the representatives of the people, it is called a *mixed monarchy;* if in an aristocracy it is so shared, it is called a *mixed aristocracy;* if in a republic, it is called a *representative republic*. But it is obvious that all these forms of government may be variously mixed together by delegations and limitations of the executive, legislative, and judicial powers, in different proportions; and the actual structure of every government depending upon the choice, or necessities, or prejudices, or accidental combinations, of each society, they do not admit of any determinate classifications. But, whatever be the form of the government, the aggregate exercise of the legislative, executive, and judicial powers constitutes what is commonly called the internal sovereignty of a nation.

8. From the nature and objects of civil government, we deduce not only the rights, but the duties of magistracy. These, of course, depend upon the nature of the functions, which belong to the particular department, legislative, executive, or judicial. All magistrates are responsible to God for the due and honest discharge of their duty; and, in republican forms of government, these magistrates are also made, in some shape, directly or indirectly, responsible to the people. Every civil government is bound to promote the interests of agriculture, commerce, and manufactures, as conducive to the strength and happiness of the people. Every government is bound to protect the persons, the personal rights, and property of its citizens from violation and injury. Every government is bound to establish courts of justice, to provide for the punishment of crimes, to enforce the obligation of legal contracts, to encourage marriages, to prohibit immorality, to cultivate a sense of religious obligation, to allow a free exercise of religious worship, and a free expression of religious opinion, so far as it is not inconsistent with the public peace and safety. Every government may impose oaths or other solemn affirmations, appealing to the consciences of parties, for the purpose of ascertaining the truth of facts, or to secure the just performance of duties. It may, therefore, reasonably require, that witnesses should be sworn, or otherwise solemnly bound to testify the truth; and it may also reasonably require parties to take promissory oaths and affirmations for the future discharge of official and other duties. And here ends our imperfect sketch of some of the leading principles of natural law, in their practical application to the relations of man to God, to himself, to other men, and to political society. The consideration of the rights and duties of nations to each other, and of their external sovereignty, and independence, and equality, belongs to another head, that of law of nations. See *Nations, Law of.*

NATURAL PHILOSOPHY. See *Philosophy, Natural.*

NATURAL RELIGION. See *Religion.*

NATURAL STATE OF MAN is frequently used as synonymous with the state of man previous to the growth of civilization, in which he is considered by some as entirely rude, by others as possessing the relics of intelligence, derived from a prior and better state. Some consider him as having begun in a rude state, but as assisted in the first steps of his intellectual progress by inspirations or revelations from Divine Providence, without which, notwithstanding his faculties, fitted for high improvement, he would have been at first more destitute even than the brutes. This view is well represented and defended, among other works, in Richard Whately's Introductory Lectures on Political Economy (London, 1831). The expression *natural state*, if intended to designate the state best fitted to the nature of man, is ill applied to savage life, notwithstanding the poet's dreams of a golden age of innocent ignorance, and the reveries of philosophers like Rousseau upon a state of savage virtue, uncorrupted by the vices of civilization. We believe that man's *natural state* is that of society, in a physical, as well as in a moral, point of view, and that man, in the savage state, is no more in a natural condition than a pine tree which is found growing near the limits of perpetual snow on the Alps, where it is stunted to the height of two or three feet. The characteristic trait of man in his (so called) *natural state*, or, rather, brute state, is improvidence, which reduces him almost to a level with the brutes, and effectually prevents his progress towards civilization; and it is a curious fact, that none of the savage tribes with which modern travellers have made us acquainted, have shown any tendency to intellectual advancement in the course of centuries, unless brought into frequent contact with civilized races—a fact which certainly is a strong argument for those who ascribe the beginning of civilization to the direct interference and assistance of Providence. See *Civilization.*

NATURE; a word of vast and various signification. In its most extensive meaning, it denotes the world, the universe; in short, the creation; hence it comprises both the physical world and the spiritual, as both are created. Those philosophers, ancient and modern, who consider God as inseparably connected with the universe, to which his animating breath gives life, include even him under the idea of nature. In fact, they have not unfrequently confounded God with the laws and principles of nature.[*] But the Christian expresses, by *nature*, in its most extensive meaning, the *universe*, as contradistinguished to *God*, the Creator. In another application of the word, *nature* is contradistinguished to *art*, and signifies every thing which is not artificial, not purposely produced or practised with reference to rules of art. In this sense, we speak of a *natural* poet, or artist, products of *nature*, &c. It must be observed here, that, in many cases, it is very difficult to draw the exact limit between nature and art. *Natural* is also used in contradistinction to *taught*, or *communicated;* thus we speak of *natural powers*, in contradistinction to the ability acquired by education, and *natural religion*, or that which man is supposed to acquire from observation of himself and the creation around him, in contradistinction to *positive religion*, or such as is revealed, and established by special circumstances. The term *natural religion* has been used, also, in a very different sense. It means, sometimes, that polytheism which is founded on the worship of the deified powers of nature. According to some, all polytheism has such an origin. In the narrowest sense, *nature* means the peculiar character of the various objects of nature in its widest sense, as given above. In this application, it is often used for character only, and we even speak of the "nature of God." In reference to men, *nature* is very frequently used for the physical constitution, and moral disposition, of an individual. In theology, the word *nature* is often used; thus men speak of the "divine and human natures of Christ," of the "natural state of man," &c.

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[*] *Natura est principium et causa efficiens omnium rerum naturalium, quo sensu a veteribus philosophis cum Deo confundebatur.* Cic. *De Natura Deor., Lib. I. c.* 8, *et sequentib.*, and *Lib. II., c.* 22 and 32. To define *natura* by reference to the *res naturales* can hardly be considered very philosophical.

In the fine arts, *nature* often means the successful imitation of nature; but, with artists of a higher order, *nature* does not signify a mere copy, but, as it were, the expression of the ideal of nature, at which she aims in all her formations, yet without reaching it, as she never produces, in crystallization, precisely that mathematical figure which constitutes her model. (See *Copy*.) Though the angles are exact, there is always some side larger than the others.

NATURE, Philosophy of. The German *Naturphilosophie* is very different from the English *natural philosophy*. This latter is termed, by the Germans, *Physik*, or *Naturkunde*. The philosophy of nature, in the German sense, is an investigation of its inmost principles, such as the great question of the connexion between matter and mind, either in the case of the individual man, or of the connexion between God and the outward universe, and other questions of this sort, the riddles that have always vexed the human understanding. Natural philosophy (*Physik*) is the great instrument of the philosophy of nature, furnishing it with the materials from which its conclusions must be drawn. Such speculations, even if not likely to lead to any satisfactory results, are yet not to be hastily condemned. One of the strongest proofs of the elevation of which man is capable, is his perpetual striving to rise above the field of ordinary observation, to "pass the flaming bounds of space and time," and, in spite of the weakness of mortality, to explore the abyss of the infinite and the everlasting. If we take the word *nature* in its most comprehensive sense, as embracing the whole of existence, it will include man both as a spiritual and a material being; so that the philosophy of nature, in this sense, will embrace all the departments of philosophy. In its more common sense, however, it has a more limited meaning, and is contradistinguished to *intellectual* philosophy. While this latter strives to investigate the essential principles of religion, morality, law, the philosophy of nature seeks for the ultimate elements of what is generally termed *natural science*. The origin of this philosophy of nature is to be looked for among the Greeks, where Pythagoras presented his views of it in a mathematical form. The term itself is undoubtedly derived from the *Philosophiæ naturalis Principia mathematica* of Newton, although Newton himself advised the students of natural science to avoid this sort of speculation. Schelling must be considered as the reviver of the philosophy of nature in Germany, and has been followed by many others, particularly Oken. Although, as we have said, we do not consider such inquiries as unsuitable exercises of the human mind, we are far from admiring the extravagances to which they have, in many cases, led the German philosophers. Deprived of the subjects which exercise the activity of man in free states, the Germans have pushed their speculations, in many branches of philosophical science, beyond all reasonable limits, and not unfrequently lost themselves in a wilderness of words, reminding us of the remark of Goethe's *Mephistopheles:*

> *Denn eben wo Begriffe fehlen,*
> *Da stellt ein Wort zur rechten Zeit sich ein.*
>
> For when ideas have grown scant,
> A ready word supplies the want.

It is but fair, however, to quote, on the other side of the question, a passage of a contemporary writer,* who treats the subject in a peculiar way. Alluding to the views he has before expressed, he says, "With such an idea of this science (philosophy), it is natural that all German speculations should bear more the character of beginnings than of finished results. Important as some of the results are to which these speculative efforts have led, still their greatest value consists in the unwearied and never-satisfied strivings of the mind to sound and comprehend itself, and that whole, of which itself is but a particle. Jacob, who, in his dream, wrestled with the Lord of heaven and earth, bearing off in his lameness a revelation of Omnipotence, is the true emblem of German philosophy. It is something that you must not expect to turn to immediate account in your particular trade or profession; nor is it necessary, in order to be benefited by it, that you should adopt its results. German metaphysics have been called the best gymnastics of the mind: and the true object of gymnastics, we know, is not to give the power to perform some great and astonishing feat, but methodically to unfold, invigorate, and refine all the growing powers of man."

NAUMACHIA (from the Greek *ναυμαχια*, a sea-fight), among the Romans; a public spectacle, representing a naval action. Cæsar was the first who exhibited a spectacle of this sort, which soon became the favourite amusement of the Roman people. The *circus maximus*, in which they were at first represented, being found inconvenient, buildings were erected by the emperors, particularly calculated for the purpose: these edifices were likewise called *naumachiæ*. They resembled the amphitheatres, and, like them, were, at first, built of wood. Domitian appears to have been the first who erected one of stone. A *naumachia*, built by Augustus, was 1800 feet long and 200 wide, and was capable of containing fifty ships with three banks of oars, besides many small vessels. They were suddenly laid under water by means of subterraneous canals, so that the ships were raised at once from the dry floor before the eyes of the spectators. The water was usually brought from the Tiber, near which the *naumachiæ* were usually built, but sometimes from aqueducts. The *naumachiarii*, or persons who fought in these exhibitions, were gladiators, slaves, criminals, &c., who were doomed to die, unless they were saved by the interposition of the people, or of the person presiding at the show.

NAUMANN, John Gottlieb, or Amadeus, one of the greatest composers, chapel-master to the elector of Saxony, at Dresden, was born at Blasewitz, near that city, in 1741. His father was a peasant, who, perceiving his son's talent for music, permitted him to go every day to school, in Dresden. A member of the chapel at Stockholm, having been led, by chance, into the house of his father, was astonished to find some difficult pieces of music lying on the harpsichord, and offered to take the boy, then thirteen years old, to Italy. The offer was accepted with reluctance. The boy was obliged to perform the most menial services for his master. He followed him, on foot, to Hamburg, and thence, in 1758, to Italy, where he was obliged to earn his own subsistence, by copying music, and to cook for his master. He finally obtained admission into the number of Tartini's pupils in Padua, and, soon after, found a kinder master. He remained for three years in Padua, and then went to Naples, where his taste for theatrical music was awakened. He settled in Venice, where he gave lessons, and composed some theatrical pieces. After a residence of eight years in Italy, he was called to Dresden, where he was appointed, in 1765, a composer to the elector. He soon after made a second journey to Italy, residing chiefly at Naples, where he composed two operas. In 1769, he returned to Dresden, in order to compose the great opera *La Clemenza di Tito,* for the marriage of the elector. In 1772, he made a third journey to Italy, where he composed, within thirteen months, five operas, after which the elector appointed him his chapel-master. He composed, for the theatre of Stockholm, his *Amphion*, *Cora*, and *Gustavus Vasa*, and, for the Danish court, his *Orpheus*. Among his best operas are *Tutto per Amore*, and *La Dama Soldato*. In later years, church-music became his favourite occupation, though he brought out his *Acis* and *Galatea*, as late as 1801. He died Oct. 23 of that year, from an apoplectic stroke. He left a number of sacred compositions, as the Lord's Prayer, several psalms, oratorios, vespers, &c. Naumann was also a great performer on the harmonica, for which he composed six sonatas.

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* Professor Follen, in his Inaugural Discourse, Cambridge, May, 1831.

NAUMBURG, on the Saale; an old city, with about 10,000 inhabitants, pleasantly situated near the confluence of the Unstrut with the Saale, in the Prussian duchy of Saxony, government of Merseburg. The cathedral was built in 1028, and deserves to be examined. It was formerly the see of a Catholic bishop; but, on the death of the last bishop, the spiritual jurisdiction was assumed by the elector of Saxony (1564). The wine of the environs is exported. The Schulpforte is in the vicinity.

NAUPACTUS. See *Lepanto.*

NAUPLIA, or NAUPLION. See *Napoli di Romania.*

NAVARINO (*Neocastro*); a fortified town, on the south-west coast of the Morea, north of Modon, with a harbour capable of accommodating 1000 ships, but with a narrow entrance, which admits only two ships abreast. The island of Sphacteria (Sphagia) lies before it. The water is deep enough for the largest men-of-war, and affords a perfectly safe anchorage. The fortifications consisted of four bastions and a citadel, on a high rock. The Venetians, who occupied this city a long time, erected the fortifications, and maintained possession of it against the Turks, until 1715. In 1821, it was captured by Tipaldo, a Cephalonian. In 1825, it was taken by Ibrahim Pacha. October 20, 1827, the combined Russian, French, and British fleet, under the command of admiral Codrington (the French admiral was De Rigny; the Russian, Von Heyden), destroyed the Turco-Egyptian fleet of 214 vessels, drawn up in the harbour of Navarino, in less than three hours. (See *Greece, Revolution of.*) In 1829, the powder magazine in the citadel was struck by lightning, and a great part of the French garrison perished in the explosion. Old Navarino, to the north-west of the harbour, is the site of the ancient Pylos, the residence of Nestor. During the Peloponnesian war (425 B. C.), the Athenian fleet destroyed a superior Spartan naval force in this harbour.

NAVARRE (*Navarra*); a province of Spain, with the title of kingdom, separated from France by the Pyrenees, having the kingdom of Arragon on the south. The kingdom was formed on the dissolution of the empire of Charlemagne, and consisted of Upper Navarre to the south, and Lower Navarre, to the north, of the Pyrenees. In 1512, Ferdinand of Arragon united the former to the Spanish crown, and the latter only remained in possession of the kings of Navarre. When Henry IV. (q. v.), son of Antony of Bourbon, and the heiress of Navarre, ascended the throne of France, this kingdom was annexed to the French monarchy, the sovereigns of which assumed the title of "kings of France and Navarre," which (with the exception of Napoleon) they continued to bear until the recent revolution. (See *France.*) Upper Navarre now forms the Spanish kingdom of Navarre, with 271,285 inhabitants, who mostly speak the Basque language; square miles, 2340; chief town, Pampeluna, with 14,000 inhabitants. Lower Navarre, previous to the French revolution of 1789, formed part of the province of Béarn, and, at present, is included in the department of the Lower Pyrenees. The inhabitants also speak the Basque language. See *Basques.*

NAVE (Middle Latin, *navis;* French, *nef*), in Gothic architecture; the part of the cross (in the form of which cathedrals are built) situated towards the west. See *Architecture.*

Nave of a Wheel. See *Hub.*

NAVIGATION; whatever relates to traversing the sea in ships; the art of ascertaining the geographical position of a ship, and directing her course.

Horace has well said, that his heart must needs have been bound with oak and triple brass, who first committed his frail bark to the tempestuous sea. Nothing, indeed, conveys a higher idea of human daring than the boldness with which man rushes forth to encounter the elements: nothing speaks louder in praise of human ingenuity than that wonderful art by which he is enabled to forsake the land, stretching forth until it fades from the horizon, and nothing visible remains but the hollow heavens above, and a trackless waste below; driven from his course by adverse winds, yet, by dint of perseverance, wearying out the elements; and, at length, arriving, with unerring certainty, at the haven where he would be. And if the daring and ingenuity of the navigator deserve our admiration, the result of his efforts will not appear unworthy of the means. It is to the exercise of his wonderful art, that we are indebted for the improvement of our condition, which arises from the exchange of the superfluity of one country for that of another, the whole world being penetrated, and every clime made tributary to every other, until the whole globe is reduced to one common country. Above all, to navigation are we indebted for that higher and nobler advantage,—the interchange of sense and sentiment, which makes wisdom common to the world, and urges man onward to perfection. Yet it has not always been so. Time was when the canoe, or the raft, constituted the only ship of the sailor, and when the narrow precincts of a lake or river set bounds to his roving disposition, and confined him within view of familiar objects. Advancing a step farther, we find him venturing from headland to headland, or from island to island, with a view of gratifying his curiosity, or bettering his condition, until a gale, driving him to some unknown coast, increases at once his knowledge and hardihood. Meantime, his bark adapts itself to nobler functions, enlarges its size, and improves in form: the rudder is added, the mast is better sustained, and the sail receives a more favourable application. And thus the art by which the ship is made, and that by which it is conducted, advance with equal steps. Deprived of the aid of surrounding objects, the land withdrawn from view, and nothing within the verge of the horizon but a waste of trackless water, the mariner casts his eyes in despair to the overhanging heavens. Aid is granted to his prayers: the constellations assist him in his course: among many revolving stars, he finds one steadfast, and makes it his perpetual guide. Such do we find the actual state of navigation among the savage tribes of our own day; and such was also the progress of the art among the earliest nations that improved it. Not the least of the improvements which we have made in this art, is that simplification in practice, by which it is rendered available with little study and capacity.

Anomalous as it may seem, yet it is true, that more study, more experience, and laboriously acquired information, were necessary to form an Acestes, or a Palinurus, than are now required to furnish forth a La Perouse or a Parry. The master or pilot, of ancient times, who had command of the sailors, and directed all the evolutions, was not merely required to know whatever related to the management of the sails, the oars, and the rudder: he was to be familiar with all the ports that lay in the track of his navigation, the landmarks by which they were designated, and all the rocks, quicksands, and dangers of the intervening deep: he was to know the course of the winds, and the indications which preceded them; also the movements of the celestial bodies, not merely for the purpose of directing his course by them, but to understand the winds and weather, which some of them, as Arcturus and the Dog-star, were believed to portend. Moreover, he had to be skilled in reading the various omens, which were gathered from the sighing of the wind in the trees, the murmurs of the waters, and their dash upon the shore; the flight of birds, and the gambols of fishes. A voyage was, in those days, a momentous and awful undertaking. When the time arrived for the sailing of a ship or fleet, the masts were raised, the sails bent, and all made ready with solemnity, and great parade of preparation. If, as was most usual, the ships were hauled up on the shore, the mariners placed their shoulders at the stern of the ships, and, at the word of command, pushed their bows forward into the sea, leaping aboard when they floated. Levers were used to move the heavier vessels, and, in later times, the *helix* (probably jack-screw), which Archimedes had invented for that purpose. Before putting to sea, the gods were ever solemnly invoked, and propitiated by numerous sacrifices; thus we find all Homer's heroes sacrificing to the gods before they undertake a voyage; and Virgil's Anchises ventures forth only after having devoted a bull to Neptune and a bull to Apollo. Nor did the voyagers alone supplicate protection; the crowds of friends and countrymen, who thronged the shore, joined fervently in prayers for their deliverance from danger, and, like the Venusian poet, commended their departing friends to the presiding deities of the winds and waves. All omens were carefully regarded; the entrails of the sacrifices examined, with every possible prognostic of good or evil; and a very small matter, the perching of swallows on the ships, or an accidental sneeze to the left, were enough to delay departure. As this, however, never took place without the most favourable auspices, it was always joyful. The ships were adorned with streamers and garlands of flowers; and, when the signal was given from the admiral ship, by sound of trumpet, a shout of rejoicing rang through the fleet, sent back by the responding blessings of the friends that remained. After advancing a short space, doves, which the mariners had brought from their homes, were released, and their safe arrival—not unfrequently charged with the last adieu of a departing lover—was considered auspicious of the return of the fleet. The admiral led the van, conspicuous by his painted sails and streamers, and opened a path in which many followed. In moderate weather, the ships often sailed side by side; but, as the wind freshened, and the sea grew rough, the order became more open, to avoid contact. At all times, they kept close to the land, following the indentations of the coast. When night approached, it was customary to anchor, or else to beach the vessels, that the crews might repose, each rower sleeping on his bench, ready to renew his labours with the returning sun. If the amenity of the weather, the friendly aid of the moon, or the open nature of the navigation, admitted of sailing during the night, the plummet or the sounding-pole directed their course, or it was shaped, as by day, from headland to headland. If the land were not visible, the known direction of the wind continued, with the aid of the stars, to guide them. Cynosura was the favourite star of the Phœnicians: the Greeks abandoned themselves to the direction of Helice. Having escaped the multiplied dangers of such a navigation, and having accomplished their object, the ships returned home with songs and rejoicings. If they were to be stranded, the sterns were turned towards the shore, and the vessels forced backwards upon it with the oars, until the crew landing, drew them beyond the reach of the surf. Sometimes they were taken into the beautiful moles, or artificial harbours, which the ancients constructed, with great labour and ingenuity, within the natural ones. These were in the shape of crab's claws, or horns, the ends, which formed the entrance, so overlapping as to exclude the swell of the sea. Castles defended their approach, and a light-tower, placed at the entrance, guided those who sailed along the coast, or desired to enter by night. It was called *Pharos*, from the island at the mouth of the Nile, where the first tower had been erected. Here the vessels were not hauled up, but simply fastened to the rings, or pillars, provided for the purpose, while at the inner port were docks and stores for building and repairing. In this port, too, were temples devoted to the gods, and especially to the patron of the place, where propitiatory sacrifices were made, and vows fulfilled or recorded: here, too, were numerous taverns, and places of more licentious gratification. Whether, however, they stranded their vessels on the beach, or moored them in the harbour, the mariners, before repairing to these resorts, fulfilled the vows made before departures, or in seasons of peril, offered thanks to Neptune, and sacrifices to Jupiter, for having granted them release from the durance of their ships. Upon those who had escaped shipwreck, gratitude was more deeply incumbent. In addition to other sacrifices proportioned to their means, they usually offered the garment in which they were saved, together with a picture descriptive of the disaster. If nothing else remained to them, the hair was shorn from the head, and consecrated to the tutelar deity; hence offering the hair was the last vow of the distressed mariner. There is much that is beautiful in these simple acts of piety; but, except in some Catholic countries of the Mediterranean, where pictures of rescue and garments are still hung before the shrine of an invoked intercessor, and where processions are still made, after escape from shipwreck, none of these touching customs now remain. What can be more beautiful than the grateful sense of divine interference with which Columbus and his followers hasten to fulfil their vows after their safe return to Palos? Such piety, if it availed not to avert present danger, at least served to inspire confidence to meet it; and, when past, the gratitude which it occasioned must have tended at once to refine the sentiments and ennoble the heart.

Imperfect as were the means and knowledge of the ancients in this noble art, yet the Carthaginians, who superadded the greatest commercial enterprise to the greatest skill which had yet been attained, achieved results which may even now be esteemed brilliant. They made the whole of the old world tributary to their city: not contented with exploring every nook and corner of the Mediterranean, they left behind the *ne plus ultra* which had hitherto almost entirely bounded the excursions of their predecessors, visited the Atlantic coasts of Europe, the British isles, and, pursuing the grand idea which afterwards led the Portuguese to India, discovered a vast extent of the western coast of Africa. Pliny even states that Hanno completed its circumnavigation, and returned home by the Red sea. Had not Carthage prematurely fallen beneath the rivalry of a nation braver and more barbarous, Vasco da Gama might have had to seek laurels elsewhere than by sailing first to India, and even Columbus been spared the most brilliant and enviable of all the achievements of navigation,—the discovery of the New World. The art of navigation gained nothing after the fall of Carthage; and the invasion of the northern barbarians effectually extinguished the few gleams of science which had survived her catastrophies. Every thing remained stationary for centuries, until the returning day of civilization began once more to dawn upon the world.

It was not until the close of the twelfth century, that man became sensible of the existence of the most singular property which an all-wise and all-beneficent Creator has provided to be his guide upon the deep; nor until a still later period, that the genius to improve it—the gift of the same good Being—at length rendered it available to so noble a purpose. We allude to the polarity of the magnet, and the invention of the mariner's compass. The property of that mysterious mineral to attract iron was early known to the Greeks and Chinese; but the far more singular one of assuming a particular direction, was not even suspected. Pliny himself, who records every thing known or fancied in his time concerning the magnet, makes no allusion to its polarity. The first accounts of this speak of it as known in the twelfth century, and that mariners sometimes made use of it to ascertain their course. Of the mariner's compass, we can only say that it was either invented or revived in 1302, by one Flavio Gioia, an obscure individual in the kingdom of Naples; and even this is not known with certainty. While the heroes of the remotest times come down to us, not only with an accurate account of battles fought and thousands slain, but with a minute detail of their private lives, and most insignificant peculiarities, posterity is at a loss to know whom to bless for a recent discovery, of all others the most useful in its results, the most important in its influence upon the destinies of man. The effects of this discovery upon navigation were not, however, immediate; for the mariner, as much as any one the slave of habit, could not at once appreciate and confide in the excellence of his new guide. This is the only excuse for the uncertainty which hangs about the dentity of the discoverer. The experience of half a century, however, showed the value of this new assistant. Navigation now assumed a bolder character. Prince Henry of Portugal, son of king John, having gained a brilliant reputation in a war with the Moors, turned from these fierce pursuits to the more congenial one of science. Retiring from court, he established himself in a retreat upon the promontory of St Vincent, and, calling round him astronomers and mathematicians from every nation, he collected and systematized all the science of the day. Nor were his researches of a mere speculative character; they were directed to enlighten the field of discovery in which he was engaged, in search of a nearer route to India, and which, though he attained not the grand object of his ambition, repaid him well by the inferior discoveries to which it led. It was to aid these enterprises that he caused charts to be drawn, which, though they involved the monstrous supposition of the earth's being an extended plane, were of no inconsiderable use to the navigator, as they brought together whatever was known of the relative position of the different points of the earth, and enabled him to see, at a single glance, as in a picture, not only the direction of the port which he desired to visit, but also the various coasts, rocks, and quicksands, to be avoided in the way. He also invented the astrolabe, which was simply a quadrantal arch, graduated at the rim into degrees and half degrees, and by directing one edge of which towards the heavenly body whose altitude it was desired to measure, a plummet suspended from the centre was made to mark the angle of elevation. This was used at first to discover the latitude from the elevation of the pole star; for, as that star is in the horizon when viewed from the equator, and rises gradually in approaching the pole, so that it would at length become vertical, it follows, that the elevation is always equal to the observer's distance from the equator, which is the latitude. The error resulting from the star's not being exactly polar, was of little note in those primitive days of the art. Soon after, by causing tables of the sun's declination to be computed, prince Henry enabled the mariner to deduce his latitude more correctly from the meridian altitude of that star. Yet all these improvements, though they added much to what was already known, left the art in its infancy. Columbus was the most accurate navigator of his day; still we find him often making an error of so many degrees in his latitude, that the mistake of an equal number of minutes would not be excused in a modern navigator. To mention one of many instances,—he places San Salvador three degrees north of its true position. But if Columbus made his discovery with such imperfect means, the greater was his merit: to him belongs the credit, by pushing boldly forth amid the uncertainties of the ocean, of forcing navigation, as well as shipbuilding, to provide against new difficulties, and march rapidly onwards in the career of improvement.

From the moment that the hitherto hidden mysteries of the ocean were thus solved, we find improvements and inventions multiplying in rapid succession: First, the log is introduced, to measure the ship's rate of sailing: Nunes, a Portuguese mathematician, next shows that the shortest distance from place to place upon the surface of the globe, must always be along a great circle of the sphere: he also proves the fallacy of the plane chart; Gerard Mercator, a Fleming, next suggests the idea of extending the meridian lines on the plane chart, in receding from the equator, in a ratio equal to the error occasioned by supposing the meridian s parallel, instead of gradually converging as they do towards the poles. By this means, the advantage of a plane surface was retained, without the error of the old chart, or the inconvenience and imperfection of the globular projection. Wright, an Englishman, improving the suggestion of Mercator, calculates a table of meridional parts, increasing the length of the arches of meridians in due proportion towards the pole, and furnishes, thereby, data to determine, in any latitude, the difference of longitude from the departure, or distance sailed east or west. At the same time, Napier's invention of logarithms wonderfully diminishes the labour of calculation, enabling the mathematician, by their help, to substitute for the tedious operations of multiplication and division, the simpler ones of addition and subtraction. Now, too, Gunter presents the seaman with his admirable scale, containing the logarithmic lines, by aid of which and a pair of dividers, all the problems of geometry are easily and accurately performed. The circumference of the earth is ascertained by measuring a given portion of its arch; and the length of a degree being known, the log-line is marked accordingly. The quadrant, or rather octant, is invented, and measures the altitude of the heavenly bodies to the nearest minute, undisturbed, like the astrolabe, by the motion of the ship. The sextant and circle still improve upon the octant and each other. And now the tables of the moon's motions, invented by Mayer, with a view to ascertain the longitude, are improved by Maskelyne, and published periodically at the expense of the British government. The idea of finding the longitude by the watch had been early suggested as an important use of that admirable machine; but it continued too imperfect until the last century, when the munificent rewards offered by Britain so stimulated mechanical ingenuity, that it has at last become admirably adapted to this important purpose.

To those who are ignorant of the means by which men are enabled to trace their way over a trackless deep, and to whom the whole art is a mystery, it may be interesting to learn how seamen, and often very ignorant ones, are able successfully to practise it. We shall, therefore, in conclusion, briefly explain the actual practice of navigation: and, first, it may be necessary to premise that, in order to determine and designate positions on the surface of the globe, latitude and longitude have been invented. Nor is this system entirely arbitrary, since nature herself furnishes the data. We have the poles, determined points of that axis round which the earth performs its daily revolutions: equidistant from these poles, and midway between them, nature aids us to conceive a line called the *equator*, and about which, by the motion of the earth in its orbit, the sun seems to perform an equal movement, accomplishing the beautiful scheme of the seasons by an annual excursion on either side. What idea more obvious, and, at the same time, more beautiful and complete, than that of measuring latitude from the equator towards the poles, upon meridional lines perpendicular to it, and formed upon the surface of the earth by planes of its axis? But the latitude, though it indicates the distance from the equator, does not alone determine the position; for the same latitude may correspond to an infinity of places, except only a latitude of ninety degrees: hence, then, the necessity of longitude, measured round the world upon the equator, and small circles parallel to it; for, crossing each other at right angles, the same latitude and longitude can only concur at one given point. Latitude and longitude are measured in degrees, minutes, and seconds; the first, from the equator to the poles, a quadrant of ninety degrees; the second, from the first meridian east and west, a semicircle, or 180 degrees, and meeting at the antipodes In this there are two things deeply to be regretted: one is, that the circle had not been divided into 400 degrees, instead of 360, each quadrant being of 100 degrees, and each degree further subdivided centesimally into minutes and seconds. Every one having any knowledge of figures may appreciate the advantage. The second subject of regret is, that, nature having furnished no data for a line at which to begin the measurement of longitude, the first meridian is arbitrarily chosen, almost every nation selecting its own capital for the purpose: hence charts and nautical almanacs must undergo a tedious reduction before they can be used by mariners of different nations. The cause of science, as well as general convenience, would be greatly promoted by adopting some ocean island as a common first meridian, whence the longitude might be universally estimated, without shocking national vanity.

Let us now show the means by which the mariner guides his bark across the ocean, and is able, at all times, to determine his progress and position. The most important instrument used by the navigator is the compass. It consists of a magnetized needle, freely suspended, by an agate or metal socket at its centre, upon an upright spindle, and possessing the singular property of pointing to the poles. The magnetic virtue is communicated to the needle, which is a flat, oblong, piece of hard steel, by applying a natural or artificial magnet to its two extremities. The magnet has two distinct properties, corresponding to its two extremities or poles, the one called *boreal*, the other *austral* magnetism, and which have a near analogy to the equally mysterious principles of positive and negative electricity. When, then, the poles of the magnet are applied respectively to the intended poles of the needle, magnetic influence is developed, not imparted; for the magnet, instead of losing virtue, has itself gained a new accession; and the needle assumes the wonderful power of pointing to the poles of the earth. Attached to the needle is a circle of paper, called the *card*, upon which the points of the compass are marked, the north and south points corresponding to the poles of the magnet, with which it revolves. The spindle rises from the bottom of a brass or wooden hemisphere, called the *shell:* this shell is connected to the compass-box by means of two concentric rings, or jimbals, which allow it to swing freely as the ship rolls and pitches, so as to maintain a perpetual level. The box, in turn, is placed within the binnacle, which stands in front of the helm. It were vain here, or any where, to speculate upon the cause of magnetism. We are acquainted indeed, with the effects of the phenomenon, but all beyond continues to baffle the search of science. It only becomes us to avail ourselves of its guidance, with humble and devout thankfulness for a gift obviously bestowed to open to us the highways of the deep.

Having in the compass an instrument for directing our course, we next seek the means of ascertaining the distance run. This we find in the log. The log is a long cord, having a piece of wood attached to one end, and called the *chip*. This is of a quadrantal form, and being slung at the corners with line, and loaded at the circumference, when thrown overboard, it remains erect and stationary, and drags the line off as fast as the ship passes through the water. The line is divided into knots and half knots, representing miles and half miles, or minutes of a degree, to which they bear the same proportion as the log-glass does to an hour. Thus the log-glass being filled with sand, to run through in thirty seconds, the length of a knot must be fifty-one feet, the first being the same proportion of an hour, that the last is of a mile. As, however, the log is found to come home a little in the effort to draw the line out, it is customary to mark the knot a foot or two less than the true length. The mode of heaving the log to measure a ship's rate, is as follows:—The log-reel, upon which the line is wound, being held by one of the sailors, the officer places himself on the rail to leeward, and a third person holding the glass, he proceeds to prepare the chip, so that the peg of one of the lines holding the chip in a perpendicular direction, will draw out, by the force of the water, when the reel is stopped, and allow it to haul in easily. Then, having gathered a sufficient quantity of line into his hand, he throws it far to leeward, that it may not be affected by the eddies which follow in the wake. The stray line, which allows the chip to get astern, now runs off, and the instant that the white rag, which marks its termination, passes through the hand of the officer he cries, "Turn!" and continues to veer out line until the glass runs out, and the person holding it cries, "Stop!" Then the line is grasped, and the number of knots that have passed off mark the speed of the ship. When this exceeds five miles, it is usual to use a glass of fifteen instead of thirty seconds, counting the knots double. The rate of sailing, per hour, multiplied by the hours sailed, thus gives the mariner the measure of his run.

In addition to these essential instruments for directing the course and ascertaining the distance, the navigator must be provided with octants of double reflection, to measure the altitude of the heavenly bodies; and a circle, or sextant, more nicely graduated, to measure distances between the moon and stars. He should also have with him a book containing the logarithms of numbers, sines, tangents, and secants, to facilitate trigonometrical calculations; tables for correcting altitudes for dip, parallax, and refraction; also lists of latitudes and longitudes for every part of the world; and of time of high water at every port, at the period of full and change of the moon, from which, at all times, to be able to find the tide; and a variety of tables, to facilitate the various problems of navigation. He should also have with him the Nautical Almanac, containing the places and declinations of the fixed stars and planets, and especially the distances of the moon from the sun and other stars, and all that relates to that body, with a view to calculate the longitude by observation. Finally, he must be provided with the general and local charts applicable to his contemplated voyage. Thus furnished, the mariner may set sail with confidence; many do so with no other aids than their compass, log, quadrant, a single chart and book of navigation, and arrive in safety.

But it is less our business to show with how little care a ship may be navigated, than to show how she may be carried from port to port with the greatest possible certainty. Having taken leave of the port, and, when the last land is about to disappear from view, either from the growing distance or the intervention of night, the mariner selects some conspicuous headland, of which the latitude and longitude are noted in his tables, and, placing a compass in some elevated position, remote from any iron object to disturb its polarity, proceeds to determine its bearing, and estimate his distance from it, either by the progress made from it, or by the ready estimate of a practised eye. Or, taking the simultaneous bearings of two distinct points of coast, he has still surer data for deducting his position. This is called *taking the departure*, and is carefully noted on the log-slate, with the time of making the observation. Thenceforth the log is thrown every hour, and the course and distance are entered upon the slate, to be copied into the log-book at the end of the day. The first thing which the navigator attends to, after making the offing which prudence dictates to clear the dangers of the land, is to shape his course for the port of his destination. And first he searches in the chart if there be any point of land, island, or rock, intervening in his way. If there be, the course is primarily shaped with reference to the danger; if not, the differences of latitude and longitude between the two places being taken, the course and distance are obtained by the aid of trigonometry. The shortest distance between any two places on the surface of our sphere, is the arc of a great circle passing through those two places. Thus, between cape Henry, in latitude 37°, and the island of St Mary, in the same latitude, but 50° lon. farther E., the distance is thirty miles less in sailing on a great circle, than if you were to sail due E. on a parallel of latitude, and consequently on a lesser circle of the sphere. In a higher latitude, the difference between sailing on a great or small circle becomes more considerable, as the small circles grow smaller; thus, in the latitude of 60°, a distance equal to that between cape Henry and St Mary would offer a disparity of nearly 200 miles. But, as it is only in sailing on the equator, or on a meridian, that the compass points us uniformly along a great circle of the sphere, in most cases it would be necessary to change the course at short intervals, in order to attain even an approximation towards this desideratum. For instance, in sailing from cape Henry to St Mary, on a great circle, it would first be necessary to sail more than a point northward of E., gradually approaching that direction towards the middle of the distance, when the course should be due E.; thence declining southward, until the land would be made upon a course as much south of E. as, on starting, it was north of it. In high latitudes, when the reduction of distance would offer a sufficient inducement, it may be advantageous to attempt following a great circle; but in the seas ordinarily traversed by mariners, the trifling increase of distance which results from following a uniform course, as obtained by Mercator's sailing, is far more than compensated by its convenience and freedom from all perplexity. For the rest, the wind not unfrequently deprives the fastidious navigator of all choice between a great circle and a loxodromic. At the first noon succeeding the time of taking his departure, the mariner works up his reckoning. This is an epoch fixed by nature, being determined by the passage of the sun over the meridian, and is therefore well chosen as the beginning of the day. The log-slate being marked, he copies the courses and distances, if from head winds or other cause they have been various; the departure from the land is also converted into a course; as is also the current, if there be any known one. He next proceeds to find the difference of latitude and departure from the meridian corresponding to each course, either by geometrical calculation, or, more expeditiously, by reference to tables, then he adds the several differences of latitude and departure, and, if they be of different names, as some north and some south, some east and others west, deducts the less from the greater. With the remaining difference of latitude and departure, he not only finds the course and distance made good, but also the latitude and longitude in; the difference of latitude being applied to the latitude left, by adding or subtracting, in sailing from or towards the equator, at once gives the latitude of the ship. But before the departure can be thus applied to find the longitude, it is necessary to reduce it for the converging of the meridians towards the poles; for, though all degrees of longitude are divided, like those of latitude, into sixty minutes or miles, yet they decrease in length, from being equal to a degree of latitude at the equator, until they become nothing at the poles. There are many ways, more or less accurate, of deducing the difference of longitude from the departure, the latitude being known; they are founded upon this principle: the circumference of the earth at the equator is to its circumference at any given parallel of latitude, as the departure is to the difference of longitude. The most easy and correct way of obtaining the difference of longitude, on an oblique course, is by the aid of a table of meridional parts; for, having taken out the meridional difference of latitude, the mariner has this simple proportion: the proper difference of latitude is to the meridional difference of latitude, as the departure to the difference of longitude. The difference of longitude thus obtained, is applied to the longitude left, adding or subtracting, in sailing to or from the first meridian, and the result will be the ship's longitude; which, with the latitude previously ascertained, determines her position on the chart. The method of navigating thus described is called *dead reckoning*. It is far from infallible, and leaves much to desire. It will, indeed, do pretty well in short runs; but as errors daily creep in from many causes escaping calculation, such as bad steerage, leeway, heave of the sea, unknown currents, and as these accumulate, and become considerable at the end of a long voyage, it becomes necessary for the mariner, removed from all reference to terrestrial objects, to resort to the immovable guides in the heavens, whose motions the God that placed them there has given him capacity to comprehend.

Let us now see how the ship's position on the ocean, represented by latitude and longitude, may at any time, without reference to course sailed, or distance, to capricious winds and stealthy currents, be ascertained with ease and accuracy. And, in the first place, to find the latitude, we have abundant data. All the heavenly bodies are, by the revolution of the earth, daily brought to the meridian, at which time, if their altitude be measured, their declination or distance from the equinox being known, the latitude is readily deduced; it may also be deduced from single or double altitudes of bodies not in the meridian, the times being accurately known. But the meridian altitude of the sun is what furnishes at once the easiest and most correct method of finding the latitude. The meridian altitudes of the stars, and frequently of the moon, must be taken at night, when the horizon is vaguely marked; moreover, their minuteness and want of brilliancy make observation troublesome and uncertain; but when the sun comes to the meridian, the observer brings a brilliant and palpable object down to a well-defined horizon; then, too, he has the advantage of observing, at a self-fixed epoch, the beginning of a new day. So great, indeed, are the advantages offered by the meridian altitude of the sun, that no other means of finding the latitude are used, except when these have failed from a clouded atmosphere, or when the momentary expectation of making the land quickens the mariner's anxiety. We shall, therefore, now explain the method of deducing the latitude from the sun's meridian altitude. Furnished with a sextant, circle, or octant of reflection, the observer goes upon deck, and, having examined the adjustment of his instrument, proceeds to bring down the image of the sun reflected by its mirror, until the lower limb just sweeps the horizon. He continues to follow and measure its ascent, until it ceases to rise; the moment that it begins to fall, and the lower limb dips in the horizon, the sun has passed the meridian. The altitude marked by the index being read off, it is next corrected. And first, the observer adds the semidiameter, in order to make the altitude apply to the centre of the object; next, he subtracts the dip, to meet the error caused by the extension of the horizon, in consequence of the rotundity of the earth, and the elevation of his eye above its surface; also the refraction of the atmosphere, by which the object, when not vertical, is made to appear higher than its true place; lastly, he adds the parallax (a small correction, inconsiderable from the sun's distance), in order to reduce the calculation for the centre of the earth; for which point all calculations are made, and which is ever supposed to be the station of an observer. Having made all these corrections, which many mariners despatch summarily, by an addition of twelve minutes, he has the true meridian altitude of the sun. Taking this from a quadrant, or ninety degrees, gives its zenith distance, or distance from that point in the heavens which is immediately over the observer, and would be met by a straight line passing from the centre of the earth through his position. Now, if the sun were for ever on the equinoctial, the zenith distance would always be the latitude; for, whilst the zenith is the observer's position, referred to the heavens, the equator is there, in like manner, represented by the equinoctial; and we have already seen that latitude is the distance from the equator. But, as the sun is only twice a year upon the equinoctial, and as his distance from it, at times, increases to more than 20°, it becomes necessary to take this distance (called his *declination*) into the estimate. The sun's declination is given, in the Almanac, for the noon of each day; by correcting it for the time anticipated or elapsed, according as the sun comes first to him or to the first meridian, by his position east or west of it, the observer obtains the declination for noon at his own position. This declination applied to the zenith distance, by adding when the sun is on the same side of the equator, by subtracting when on the opposite side, gives the true latitude. A daily and accurate knowledge of his latitude is, then, to the mariner of our day, a desideratum of easy attainment. By its aid, nothing is easier than to sail clear of any rock or shoal that crosses his track, either by a watchful look-out at the moment of passing its latitude, or else by avoiding its parallel entirely, until it be surely passed. Moreover, this is his best and surest guide in aiming at his destined port; for he has but to attain the exact latitude it lies in, and then sail directly upon it, east or west, to be sure of success. And here nature is again his friend: by a singular coincidence, discoverable in glancing at the map of the world, most coasts and continents lie in a northern and southern direction. Hence the value attached, by seamen, to an accurate knowledge of the latitude; and hence the saw of "Latitude, lead, and look-out." But if it be possible to obtain the longitude with any thing like an equal ease and certainty, no one will dispute its advantage. Although, as we have stated, most coasts follow a northern and southern direction, there are yet not a few, such as both coasts of Cuba and San Domingo, which lie east and west, so that points along them are only determined by the longitude. And even to have the satisfaction, not merely to run his finger along the chart, and say, "I am somewhere along that parallel," but to be able to point to the spot, and say, "I am there," is, to the nice navigator, no insufficient motive.

Various ways have been devised to find the longitude, in all of which the great element is time. Inasmuch as the earth performs her diurnal revolution in twenty-four hours, from the time any given meridian is brought under the sun until it reaches it again, it follows that twenty-four hours and 360 degrees are both equal to a circle, and that the equator and other circles of longitude may be indifferently estimated by either of these divisions. Hence the difference of time between two places, is no other than the difference between the sun's coming to their respective meridians, or, in a word, their difference of longitude; and hence it follows that if we, by any means, simultaneously ascertain the time at the first meridian, and the time at ship, we shall have ascertained the longitude. The easiest method of solving this problem is by means of the chronometer. This is a watch so nicely constructed as to go with perfect uniformity, either having no error whatever, or else losing or gaining a known quantity every day. This watch is set to the time of the first meridian, and its rate is carefully ascertained, before leaving the land. To find the longitude by means of it, the mariner has merely to take an observation of the sun or other star, when rising or falling rapidly, and deduce the time of ship; this, compared with the time at the first meridian, simultaneously given by the chronometer, determines the longitude. Several chronometers concurring with each other, may make the mariner sure of his position; but a single one, unchecked by other data, and liable, from its nicety of construction, to easy derangement, is a dangerous guide. The many noble ships so inexcusably lost, in late years, between the entrances of the Delaware and Hudson, owe their destruction to a blind dependence on a single chronometer. The most expeditious and certain way of observing the longitude, is by the eclipses of Jupiter's satellites. Their times of immersion and emersion at the first meridian are noted in the Almanac, and these, compared with the times at which the telescope shows the observer the occurrence of the same phenomena, determine the longitude. But the unsteadiness of a ship at sea deprives the mariner of this expeditious method. Fortunately, there yet remains open to him one of sufficient accuracy: this is, by observing the distance of the moon from the sun and other fixed stars, and comparing the time of observation with that time at which the Almanac shows a similar distance for the first meridian. The only difficulty attending this beautiful method, which the rapid movement of the moon in her orbit, and her consequent change of distance from the stars, renders proportionably correct, consists, in the first place, in nicely observing the distance, and then in correcting it trigonometrically for the errors occasioned by parallax and refraction. A single lunar observation, like a single chronometer, has been confided in to the loss of many a gallant ship; but a series of them, taken from day to day, with stars on different sides of the moon, and concurring to show the same longitude, are worthy of all confidence. Thus, aided by these heavenly guides, is the mariner at all times able to determine his position. He should not, however, be inattentive to any means of information; he should, by observing the difference between the magnetic bearing of some heavenly body, and what calculation shows to be its true bearing, daily inform himself of that wonderful phenomenon,—the magnetic variation; he should, in calm weather, ascertain the direction and force of the current, by lowering a boat, and anchoring it to an iron vessel let down below the superficial strata of the ocean; in approaching the land, he should be attentive to the changing colour and temperature of the sea, which last is, especially on some coasts, an admirable monitor; also to the floating of weeds, and the flight of birds, such as do not stray far from it. All these little cares, the watching of the barometer, and profiting by its friendly predictions, and the frequent inspection of the chart, whilst they take from the dangers of navigation, amuse the mariner, and beguile the tedium of the sea. Thus, then, is a ship conducted from port to port; thus are dangers avoided, difficulties overcome. Though they who traverse the vast ocean leave neither track nor waymark for the guidance of those who follow, it is thus converted into a plain and convenient highway, extending to the extremities of the earth. See the article *Ship*.

NAVIGATION LAWS. The acts of the British parliament, intended to favour British shipping in preference to that of other countries, are denominated *navigation acts*. It is the policy of every nation having any considerable advantages for maritime commerce, to encourage and protect their own shipping, by giving it advantages in the home ports. One mode of doing this is by absolute prohibitions in certain species of trade; another is, by taxing foreign shipping, or the cargoes imported or exported in foreign bottoms, at a higher rate than the national vessels or their cargoes. The most celebrated law of this description is that passed by the British parliament in Cromwell's time, in 1651. Its object was to wrest the carrying-trade of Europe from the Dutch, into whose hands it had, at that time, mostly fallen. For this purpose all foreign vessels were prohibited from engaging in the trade between one British port and another, or between any British port and a colony or dependency of Great Britain. This trade is equivalent to the coasting-trade of the United States of America, and such other countries as have no foreign dependencies. The trade between the ports subject to any government, whether at home or abroad, is a proper object of legislative regulation, and the reasons for confining it generally to the national shipping are obvious; since, if a country depends upon foreign vessels to carry on the trade between its different ports, the means of communication are liable to be withdrawn in case of a war with the nation whose shipping is employed in such trade. Another reason in favour of such a law is founded in the policy of most countries to open to their own citizens the means of employment, as far as their habits, disposition, and capabilities dispose them to fill up such employments. There are other reasons for such a regulation, which need not to be stated here, but which, with those above stated, have induced maritime countries to pursue a similar policy. The other material provision of the law of Cromwell's parliament, was a requisition that foreign ships should bring to England only the products of the countries to which the ships belonged. This at once cut off the Dutch from all their foreign carrying-trade, as far as Great Britain and its dependencies were concerned. The operation of such a law would, of course, be limited by the amount of commerce of the country by which it should be adopted. But the commerce of England being extensive, it would necessarily have a powerful influence in increasing the maritime industry and capital of the country. If every nation with which Britain had any commerce, had had a commercial marine, and had passed a similar law, still the British shipping would have stood upon an equal footing with that of each foreign country in carrying on the trade between the two, and the Dutch, the great rival against whom the law was levelled, would have been confined to the trade between Holland and Great Britain. But as all foreign nations had not such a marine, and as all those which had did not immediately pass similar laws, the British navigation not only regained from the Dutch the transportation between British and other foreign ports than those of Holland, but also acquired a very large portion of the foreign carrying-trade between one foreign port and another; of a large proportion of which they have kept possession now for more than 170 years. Such are the general features of the navigation acts of Great Britain; but they allowed of some exceptions, as where it was supposed to be for the advantage of Great Britain to supply foreign countries with any particular product of England or its colonies, and such a supply would be promoted by relaxing the navigation laws, as was the case, for a time, in respect to some West India products, the vessels of other countries were permitted to trade to the colonies, and take away cargoes of such products for any foreign port. This was a relaxation of the colonial system, which is closely interwoven with the navigation laws. It was adopting, so far, the principle of free trade. But this principle does not, by any means, form the basis of the present system of the navigation laws of Great Britain, nor, indeed, of any other country having a commercial marine of any considerable extent. In the trade between any two countries, one cannot obtain any advantage by legislation, except by the supineness or mistakes of the other; for whatever regulation is adopted by one, may be countervailed by a corresponding regulation of the other. In case of a reasonable share of intelligence on the part of both, each must be content with a reciprocity; and in this nations are, at present, willing to acquiesce. Another object of the navigation laws is to promote the fisheries, as a source of wealth, and also a nursery of seamen. The laws of England, Holland, France, and the United states of America favour this branch of maritime industry by strenuous encouragement and protection.

NAVIGATOR'S ISLANDS; a group of about ten islands, in the southern Pacific ocean, to the north-east of the Friendly islands; between lat. 13° and 15° S., and lon. 168° and 173° W. Like most other islands of those seas, they are surrounded with coral reefs, and appear to be of volcanic origin. The natives are numerous, strong, well made, fierce, and active. The islands abound in cocoa, bread-fruit, bananas, and domestic animals of several sorts. They were discovered by Bougainville in 1768.

NAVY, in the usual sense of the word, the whole body of the ships of war belonging to a nation or monarch. In no state of society, however primitive, has man long learned to navigate the rivers and seas that surround him, before his evil passions have involved him in contention and war. It is not enough that murder should stalk the earth, and make its fields drink the blood of him to whom it was given as a heritage; the ocean, already terrible in its own horrors, is also too often crimsoned with the same carnage.

It may, perhaps, be questioned whether maritime pursuits be not more likely to produce discord than those of the land. The shepherd subsists upon his flock; it furnishes him at once with food and raiment; the cultivator lives upon the produce of his field; but the moment that the merchant goes forth to exchange his superfluity for the superfluity of others, there arises a collision of interests; that spirit of cupidity which has, in all ages, characterized commercial nations, is aroused; avarice, hatred, and revenge excite to discord, and the seeds of war are already sown. Thus we are told that the Phœnicians, in their solicitude to retain the vast monopoly of trade, for which they were indebted to their enterprise and industry, not only concealed studiously the courses of navigation by which they arrived at the remote countries with which they traded, but, if followed by strange vessels, would seek to mislead them, conduct them into dangerous situations, and even risk the loss of their own vessels to effect that of their pursuers. To complete the discouragement of their commercial rivals, they plundered and destroyed every foreign vessel and crew that they met with—a system which doubly favoured their desire of gain. Such is the origin of maritime war and naval armies.

The earliest instance of naval warfare recorded in history, is that of one Erythras, a prince who made himself master of the Red sea, and monopolized its commerce, to the exclusion of the Egyptians, who were only allowed to navigate it with a single ship. The Egyptians, thus restricted, are said to have partially evaded the edict by making their single ship of an unusual size; much as the British did, in past centuries, with their single annual ship to Puerto Bello. Erythras is not, however, allowed the undisputed honour of originating naval war. He has a formidable competitor in Jason, and two still more so in Neptune and Hercules. Without attempting to settle the respective claims of these nautical worthies, we will content ourselves with endeavouring to discover the nature of naval war in the earliest ages of history.

The most noted battle of ancient times is that which took place between the Greeks and Persians at Salamis, five centuries before the Christian era. The situation of the Grecians struggling to preserve their liberty from the threatened yoke of Xerxes; the generous rivalry of Aristides and Themistocles; the heroism of Artemisia, with many romantic incidents, combine to shed a strong interest over this famous engagement. The Grecian fleet consisted of three hundred and eighty ships, all, doubtless, very small, as we are told that the largest galley was of but fifty oars, with only eighteen fighting men. The vessels were without decks, and the contest was decided either by running each other down, or else by grappling and fighting hand to hand, the victory declaring for those who excelled in numbers or in personal prowess. The fleet of Xerxes was superior in numbers, as well as in the size of its ships, and as his army was numerous beyond anything known in modern times, it was easy for him to man it powerfully. But the situation of Salamis favoured the Grecians, as it hindered the Persians and their allies from displaying their whole force. The Greeks having determined to give battle rather than await it to their inevitable destruction, Themistocles bore down with the full impetus of a fresh breeze, which blew regularly every day. The Persians received the first attack undaunted, and even returned it with so much vigour that the Greeks began to falter, when, according to Herodotus, an heroic Athenian by the name of Pallene, retrieved their situation by boldly steering his galley into the midst of the enemy, and drawing his countrymen after him to his rescue. And now the height and sluggishness of the Persian vessels, even their excessive numbers thus embarrassed in a narrow strait, and the disconnected efforts resulting from the various nations of the allies, and from a plurality of commanders, threw them into utter confusion. Moreover, among the Persians and their allies, there was much disaffection; while, on the contrary, the Greeks had a good cause, and every thing at stake; their vessels, too, were light and manageable, and they were expert in manœuvring them; they did every thing in good order; finally, they had but one supreme commander, and he Themistocles. Under such circumstances, it is not much to be wondered at that they should have proved victorious.

There are one or two incidents, which took place during the battle, not a little characteristic of the mode of fighting and of the manners of the times. We are told of a Grecian galley being sunk by an Ionian of the Persian fleet; this, in turn, sustained a like fate, being run down by a galley of Egina. But, before their vessel sunk under them, the Ionians had time to throw themselves into the ship of their antagonists, and by the desperate bravery to which they were urged by their situation, seconded by their dexterity in the use of the spear, for which they were famous, gained possession of the Eginetic galley. Still more peculiar was the stratagem by which the queen Artemisia contrived to escape. She had opposed the engagement; but when it was determined to give battle, she displayed greater valour than any of the followers of Xerxes, so that he took occasion to say, as he viewed her conduct from his throne on a neighbouring eminence, that only the women of the fleet behaved like men. This unsustained courage involved her, at length, in imminent danger, and she found herself hotly beset by many enemies, when, as the only means of escape, she resorted to the stratagem of hoisting Grecian colours, and attacking a Persian ship, commanded by one Damasithymus, king of Calynda, which she speedily sent to the bottom. This deed, doubtless, cost her the less, that Damasithymus had once been her enemy. Her pursuers, seeing this, believed her vessel to be one of their own fleet, and so Artemisia escaped.

In the two centuries succeeding this battle of Salamis, many improvements were introduced intc naval warfare. They originated chiefly with the Carthaginians, who had inherited all the commercial skill and enterprise of their Phœnician forefathers. No longer contented with the trade of Egypt, Phœnicia, the Red sea, Gaul, Spain, and Mauritania, and the narrow limits of the Mediterranean, they stood boldly forth beyond the Pillars, hitherto esteemed the *ne plus ultra* of the earth, and carried their commercial enterprises to the western coasts of Europe and Africa, and even to the British isles. So extended a commerce, and the spirit of monopoly with which it was carried on, led to the creation of powerful armaments; which were also necessary for the protection of the many colonies which Carthage possessed in Spain, Sicily, and elsewhere.

The galley was the form of ship used in war by the Carthaginians. Their *triremes*, as they were called by the Romans, from their having three rows of oars, were usually one hundred feet in length, ten in breadth, and seven in height. This form, long, low, and narrow, though not adapted to encounter a stormy sea, was admirably suited to move rapidly in smooth water; for, whilst the small breadth opposed little resistance in dividing the water, the extreme length made room for many rowers, and gave great impetus to the attacks of the beak. The bow curved upwards, forming a circular beak, which was faced with iron: or else it receded suddenly, having a single sharp point, like a ploughshare, projecting at the surface of the water, and intended to open the side of an antagonist, and cause her destruction. Frequently the beak was formed to represent a lion, tiger, or other ravenous beast calculated to inspire terror. It was always surmounted by the national emblem; thus an owl stood on the prow of an Athenian galley; a cock on a Phœnician or Carthaginian, and the eagle on a Roman. Here or at the stern were also placed the ensigns and standards, and trumpeters, standing beside them, sounding their shrill blasts to inspire courage at the moment of onset. From the bow to the stern there extended a flooring or deck, which served as a battle-field for the mailed and heavy armed soldiers who fought. The stern was covered with a circular shed or pavilion, richly carved and decorated with streamers and trophies. Under this was placed the *tutela*, representing some patron deity, to which sacrifices and prayers were offered, and which was held so sacred as to furnish a sanctuary to whoever took refuge there. From this elevated station, too, the commander surveyed the fight and directed the efforts of his followers. There were two distinct classes of officers and men in each galley. The commander of the soldiers was supreme, and under him the pilot, who took his station abaft, at the side of the steersman, directed all necessary evolutions and manœuvres. The pilot was assisted in the command of the sailors by his mate, and by the *agitator* or encourager of the rowers, whilst a musician marked the measure of the stroke, and, by the harmony of his voice and instrument, inspirited the rowers when weary with toil. As for the rowers themselves, they were placed below deck on rows of benches, ascending above each other diagonally, the bench of one serving for the footstool of his comrade immediately above and behind him. We read of five benched, eight benched, and even forty benched galleys; but this cannot possibly mean, as many suppose, so many distinct banks of rowers. (See the article *Galley*, where various theories regarding the constitution of the ancient war-vessels are given.) We have already said that the rowers were distinct from the soldiers who fought, for rowing was esteemed a great drudgery, and was not unfrequently, in ancient as in modern times, the punishment of malefactors, who were chained perpetually to the benches on which they rowed. It was, perhaps, from the infusion of such unamiable materials, that sailors came to be esteemed infamous and wicked wretches, totally destitute of humanity and religion. Galleys were steered with oars run on the quarters, and managed by men standing near the pilots, and ready to obey their orders. Sails were also used to ease the rowers, and attain a greater velocity, when the wind was fair; both masts and yards were, however, always taken down and stowed out of the way, on the eve of an engagement, and the oars alone used, thus enabling the galley to move and turn without reference to the direction of the wind. These sails were sometimes made of variegated stripes, and we occasionally read of the galley of an emperor or an admiral having sails of purple, embroidered with gold. The body of the vessel was tastefully painted, representing gods, animals, or historic scenes, and sometimes the oar-blades were richly gilded.

Such were the locomotive means of the galley. Its means of offence consisted in the various weapons and missiles used on land. Javelins and arrows were discharged in showers from the deck, or from turrets at the bow and stern. As a protection from these, a curtain of hides was used, from behind which the soldiers discharged their missiles in return, or thrust with very long spears, used only at sea. In the centre were engines from which rocks were projected of sufficient size to sink a ship; and, as the combatants approached, great masses of iron, from their form called *dolphins*, were let down from the elevation of the mast-head, and sometimes passed through the bottom of an adversary, to his inevitable destruction. Battering rams, which were beams pointed with iron, were also suspended from the mast, and forced with destructive effect against the enemy's side. But the great means of annoyance was the attack of the beak; and, in order to make it with complete effect, it was very desirable to gain the wind, so as to bear down upon an adversary with the greatest velocity, demolish his oars, open his side, or even overturn and run down the vessel. Earthen pots of live coals and pitch, and of combustibles ready to combine and burst forth in flames, were either cast from ship to ship, or so suspended over the beak, that when the shock took place they would fall on the deck of the assailed. It is said of Hannibal, an ancestor of the great Hannibal, that he threw, on one occasion, pots containing live snakes upon the enemy's deck, and, as he had conjectured, filled the crew with horror at so unwonted an attack, and availed himself of their consternation in securing the victory. Fire ships were also used at this early period with destructive effect. The line of battle was usually triangular, the admiral's ship being at the angle in advance, and the line of store-ships forming the base. Before engaging, it was usual for the admiral to pass in a small boat throughout his fleet, haranguing his followers, and urging them to do their duty. Thus inspirited, a shout of anticipated triumph would pass from ship to ship; and when the gilded shield was at length displayed as a signal for battle, the shrill trumpets sent forth their blasts, and the combatants rushed to the encounter, rending the air with shouts and war songs. The battle won, the victors returned to port, towing their prizes, their ships being decorated with fragments of the wrecks, themselves crowned with laurel, and singing pæans to Apollo. The richest of the spoil was reserved as an oblation to the gods and broken, or even entire galleys were placed in the precincts of the temples.

Such was the state of naval warfare until the Romans, incited by their contest with Carthage for the possession of Sicily, first turned their attention to naval affairs. Such was the invincible daring of this nation, that, having scarce ever dreamed of navigation, they yet resolved to attack the Carthaginians on their own element. At this conjecture, a Carthaginian cruiser, accidently stranded on their shores, furnished them with a model. But where should they procure mariners to man their galleys? This difficulty yielded to Roman resolution. Benches were established on the land; the recruits were placed with their oars, as if embarked, and an officer, standing in a conspicuous position, made signs with his hand, to indicate the instant when they should together dip their oars, and then sweep them with a concerted movement of the arms and body. In this way, a sufficient number of men were taught to row, during the construction of the galleys, and a fleet of 120 vessels, with nearly 40,000 oarsmen and soldiers, was equipped for sea. Before sailing, however, to meet the enemy, these hastily manufactured sailors were exercised for some time on board the galleys. After all it was probable that this fleet was as awkward and unmanageable as might have been expected, and that the consul Duilius, ere he had long been to sea with it, discovered that, though he had copied much from the Carthaginians, there was much still that had escaped him. For we find him soon calling up his ingenuity to devise some means of neutralizing the superior skill and seamanship of the Carthaginians; this he effected by the invention of the *corvus*. It was a bridge or platform planted at the bow, and which could be turned at pleasure from side to side, or hoisted up to a mast erected for the purpose. At length the two fleets came in sight, and prepared for battle. The Carthaginians, being superior in numbers, and still more so in experience and skill, were filled with contempt at the rude appearance of the Roman galleys, and their more clumsy evolutions. They were certain of victory. Nevertheless, as they approached nearer, the awkward appendage at the bow, which had at first excited ridicule, began to inspire mistrust. This was augmented when they found that the Romans paused not to discharge their missiles, but, receiving those of the Carthaginians, steered boldly on, until each Roman galley had struck an enemy, when the ropes that held the *corvus* suspended to the mast being loosed, it fell with fatal force upon his deck, crushing those who had collected to defend the entrance. The bars of sharpened iron with which the bottom of the bridge was armed, transfixed the deck, with those who stood in the way, and the two galleys remained firmly grappled. And now the Romans, receiving the enemy's arrows on their shields, raised their war-cry, and rushed, sword in hand, to the assault; seamanship and skill were set aside, and courage and personal prowess became the arbiters of the contest. The former confidence of the Carthaginians was only equalled by their present consternation. Great and terrible was the slaughter. Eighty galleys were either taken or destroyed, among them the famous galley of Hannibal, the Carthaginian admiral, which had once belonged to Pyrrhus. The admiral himself narrowly escaped in a small boat. This victory, if we consider the circumstances under which the battle was fought, is inferior to none in history. It was duly estimated at Rome; the most extraordinary honours were decreed to Duilius, he being the first Roman who enjoyed a naval triumph. A rostral column was also erected to him, upon which were placed the beaks of the Carthaginian galleys. This *columna rostrata* is still seen and admired in old Rome, where the stranger does not fail to visit it, and where, turning from the humiliating picture of modern degeneracy, he traces with pleasure an inscription which recalls the best days of the republic.

From this time until the invention of cannon, naval warfare underwent little variation. The emperors of Constantinople continued to observe the same system of annoyance and defence in their navy, which must have been considerable, as we read of an expedition sent to subdue Crete, consisting of 200 ships and 49,000 men. They wisely reduced the height of their galleys, using none but *dromones* of two tiers, having in all 100 oars, rowed by as many men. A level platform covered the rowers, upon which the soldiers drew up and fought as upon land. The captain stood at the poop between the two steersmen, whence he directed the efforts of his followers. Thence, too, he discovered and obeyed the signals of his admiral—an invention already introduced to signify orders at a distance. The line of battle was somewhat changed; from a triangle it had become a crescent. The horns pointed rearward, and the admirals stationed in the centre began the attack. The same means of annoyance were still employed: arrows were shot from bows and cross-bows; javelins were discharged from engines; and huge rocks were projected from machines, which, we are told, often found their way through the deck and bottom of the hostile vessel, destroying both galley and crew. But the most dreadful weapon then in use was the iron tube, from which the Greek fire was projected in streams upon the vessel and crew of an enemy. This combustible, which had been much earlier used, in the less destructive form of missiles, was of such fearful activity that nothing could resist it, and water, instead of extinguishing, did but augment its fury. Terrible must it have been to the northern pirates, of whom we are told that, imitating those of their countrymen who had invaded Europe by other routes, they descended in canoes, by the Borysthenes, into the Black sea. Having plundered its shores, they were hastening to seize upon Constantinople, when they were met by the fleet of the emperor. Hardly had they raised the war-shout, as they paddled their canoes to the assault, when they were met by well-directed streams of liquid fire, issuing from the prow of every Grecian galley. Consternation seized them, and they plunged into the sea, happy in having yet the alternative of a choice of deaths.* Though the attack of beaks was still continued, less importance was now attached to the point of gaining the wind. In order to escape from the torture of the fire-tube, it was more usual at once to grapple broadside to broadside, and, while the rowers assailed each other with pikes through their row-ports, the soldiers rushed, with sword and buckler, to the attack, fighting desperately, hand to hand. Hence it is that, in the history of those times, we so frequently read of ten, twenty, and even thirty thousand men, slain in a single naval encounter.

At length, a great revolution in naval warfare was brought about by the introduction of cannon. They were first used by the Venetians against the Genoese, in 1370. It is a little singular, when we consider their efficacy for the destruction of ships, that they should not have been employed for this purpose until a whole century from their first use in Europe by the Saracens, in the defence of Niebla, and nearly thirty years from their general introduction, as an implement of war on land, at the siege of

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* The Greek fire has lately been reinvented by an American, of the name of Brown. He discharges it, like any other fluid, from a common engine, and, from its resinous and cohesive nature, projects it much farther. As it passes out of the tube into the open air, a match, placed at the end, converts it into a liquid fire, of a destructive energy, not at all inferior to what is attributed to that of the Greeks. He has offered his invention to the American government; and, as connected with a system of steam-batteries for the defence of a coast, it would prove terribly efficacious.

Algeziras. When first introduced, the cannon were mounted on the deck which covered the rowers, and were either made to protrude over the rail, or else were pointed through port-holes pierced through the bulwark which defended the crew. In the *galleas*, which was first used at Lepanto, there was one row of ports between the oars, and then batteries of heavier cannon upon the poop and forecastle. Notwithstanding all these innovations, we shall yet find that the ancient mode of naval warfare was, in a great measure, maintained in that renowned naval battle, the battle of Lepanto.

The battle of Lepanto was fought between the papal, Venetian, and Spanish fleets, and that of Selim, sultan of Constantinople. In September, 1571, the Christian fleet was collected, and made ready, in the port of Messina. It consisted of 250 ships, manned by 50,000 men, and was placed under the command of don John of Austria, natural son of Charles V., for whom expressly the title of *generalissimo* was then invented. The pope, having proclaimed a general season of fasting and prayer throughout Christendom, sent a strong corps of ecclesiastics to officiate in the fleet, and a consecrated standard to be displayed from the ship of the admiral. Absolution was promised to every sinner who should fight for the faith, and heaven was opened to the slain. Don John was urged to give immediate battle, and to feel secure of victory. Selim, on the other hand, was not backward in preparing to meet the danger. Though part of his forces was still employed in reducing the island of Cyprus, which was the original subject of contention, he yet succeeded in equipping a fleet still larger than that of the Christians. It was intrusted to the pacha Ali, who proved himself well worthy of the charge. Nor was the sultan slow, on his side, in promising all sorts of good things to the defenders of the faith, and in picturing the joys of a Mohammedan paradise, as the prize of martyrdom. Both parties were to fight the battle of the Most High. The two fleets came together in the gulf of Lepanto. What the Christians wanted in numbers, they made up in superiority of equipment. The prows of their galleys were closer, and better defended, and their soldiers better provided with offensive and defensive armour. They made general use of helmets, coats of mail, and fire-arms, whilst many of the Turks defended their bodies with large leathern shields, and had no more destructive missiles than arrows. Moreover, fortune turned against them at the moment of onset; for the wind, which had hitherto been favourable to them, now blew in the sails of the Christians. The battle, as of old, began with the admirals. Don John and Ali, after a short cannonade, closed and grappled. Both crews rushed to the assault, meeting, in deadly struggle, upon the gunwales. Three times did the Spaniards gain the deck of their adversary, and as often were they driven back. Perhaps the Turks would have followed up their advantage to complete victory, had not don John, in that critical moment, received a timely reinforcement of 200 men. By their assistance, the Turk was again boarded, and no longer with doubtful success. The slaughter was indiscriminate and terrible, the crescent being quickly lowered, and replaced by the cross, whilst the severed head of Ali, planted on a pole, and hoisted at his own masthead, filled the breast of his followers with momentary consternation. Scarce was this result manifest, ere the cry of *Victoria! victoria!* pealed from the ships of the Christians; and, led on by a host of heroes—a Colonna, a Veniero, a Doria—they rushed furiously upon the enemy. Nor did the Turks tamely yield the victory, which they had, of late, so often won. The ships grappled; the enemies fought hand to hand, and sword to cimeter; pikes, javelins, and arrows, cannons, matchlocks, and arquebusses, aided the fury of the combatants. Turks and Christians had never fought so valiantly, though that was, emphatically, the age of daring. At length, whilst the result was yet doubtful, the Turkish galley-slaves, taking courage at the partial success of their fellow-Christians, and dreading the effect of the reverse upon their own condition, suddenly rose, broke their chains, attacking their masters with them, or with whatever other weapons fury furnished them, and repaid them, in a few short moments, for years of cruelty. In an opposite manner, the criminals who performed the same office at the oar in the Spanish and Italian galleys, having asked leave of their officers, and been unchained and armed, boarded the enemy with a fury rendered irresistible by despair, a recklessness which had nothing to lose, and the double hope of meriting liberty or obtaining martyrdom. At length, the few Turks that remained began to think of flight. Thirty galleys alone escaped to Constantinople, through the skill of the intrepid corsair Ulucciali, who carried away the standard of Malta, as a trophy.* A few reached the neighbouring shore, and abandoned their ships; 130 were taken; the rest were either sunk, burned, or battered to pieces; 10,000 Turks were taken, 25,000 slain; 15,000 Christians were released from the servitude of the oar. Nor was the victory cheaply purchased—10,000 Christians were among the number of the victims. Beautiful had been the display of the encountering fleets, but now how changed the spectacle! Shattered fragments of wrecks and masts covered the sea, which was everywhere streaked with human blood, or strewed with limbs and disfigured corpses. The whole of Europe resounded with shouts for this glorious victory, and with the praises of its hero. He was pronounced the greatest warrior of the age; the Christians of Macedonia and Albania tendered him the sovereignty of their country; and, as for the pope, when the news reached him, he is said to have exclaimed, in a holy ecstasy, "There was a man sent of God, whose name was John."

The rapid improvements which the discovery of America effected in naval architecture, for commercial purposes, extended equally to its other branches. A gradual improvement took place in the form and adaptation of ships of war, and they were, at the same time, progressively increased in force and size, until, before the close of the sixteenth century, we already read of Spanish and Portuguese ships of eighty and ninety guns. In the last century, ships of war at length attained a size which may be considered as a maximum; for nature herself has set bounds, to surpass which would be, if not impossible, at least inconvenient. Many harbours exclude vessels of excessive depth; the trees of which ships are made do not exceed a certain growth; and man, who is to construct, equip, and finally manœuvre these wondrous machines upon the deep, though able to effect much by an advantageous application of his strength, and by concerted efforts, is yet a being of limited powers. The English Caledonia, the French

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* The Corsair carried away a more precious treasure in the person of the poet-hero Cervantes. His intrepidity had hurried him among the first on board of the enemy's galley, to which his own was grappled; but his comrades were repulsed, the grapnels broken, and he, left wounded on the deck, was carried away by the renegado, as he himself tells us, in the beautiful episode of *El Captivo*, "the only captive among so many liberated, the only sad among so many rejoicing Christians." The matter might, however, have been worse. Had Cervantes been slain, instead of taken at Lepanto, we had never known the valiant don Quixote, nor the facetious Sancho.

Commerce de Marseilles, and the *Santissima Trinidad*, may almost be looked upon as magnificent monsters. The ship carrying one hundred guns, on three uniform decks, may be considered as the best adapted to unite formidableness and efficiency.

When this increase of size took place, the oar ceased to be a fit agent to move so weighty a machine, and it only remained, by the adaptation of sails, to make the most of that which nature has placed at our disposal, in the restless and ever-moving element which surrounds us. Galleys have been long discontinued on the ocean, and are now only used in the Mediterranean, where immemorial usage renders every thing hereditary. With this revolution in the manner of propelling vessels of war, an equal one was introduced in the method of fighting. Their augmented size rendered it more inconvenient to grapple and fight hand to hand, and risked the destruction of both ships, if the weather were tempestuous. Hence this mode of combat was rarely resorted to; and battering with cannon, at a favourable distance, until one party or the other struck, became the ordinary mode of naval warfare. This we shall now exemplify, by briefly describing the present mode of engagement, and relating a few instances of modern naval battles between single ships and fleets.

When two adverse ships come in sight of each other upon the ocean, accident decides, usually, which is to windward. To be to windward, or to the side from which the wind comes, is always esteemed an advantage. If the weather ship be of inferior force, it enables her to keep out of action much longer, and, though a poorer sailer, she may do so until the intervention of night increases the chances of escape. If, however, the weather ship be of superior force, she is enabled to bear at once down, and direct her head upon the enemy, and, having the advantage in sailing, must soon be alongside of her. We will, however, suppose a case in which two equal ships meet, and are mutually anxious to engage. Then, also, the weather-gage is an advantage, for the ship to lee-ward, careening to the breeze, exposes her side below wind and water, and, if struck there, and afterwards forced to tack and change her careen, or if merely brought upright, the shot-holes thus made are thrown out of the reach of repairs from without, and may cause her sinking. The ship to windward, on the contrary, has her lee-side exposed to the attack, and the ordinary water-line depressed below the surface, in proportion to the strength of the breeze. In this situation, if she receives dangerous shot-holes at the water's edge, by changing her tack, she may bring them above the surface, so as to stop the leaks. Being to windward, moreover, confers the advantage of heaving up at pleasure to cross an enemy's bow, or stern, for the purpose of a raking fire.

Assuming the advantage of the weather-gage, let us prepare for action. Topsails, top-gallant-sails, jib, and spanker, with the courses hauled up, ready to be set again, are good sails to fight under, for with them your ship is under perfect command to advance, manœuvre, or lie to. If there is an appearance of squally weather, it is well to have a reef in the topsails, in anticipation. The crew are called to quarters by beat of drum, every man going to the station which has been rendered familiar to him by frequent training, under the eye of his officers. The commander, standing in a conspicuous station on the quarter-deck, watches his own ship and the enemy, and conveys the order that the occasion may require by voice, or through the medium of his aids. Under him, the first lieutenant commands the offensive and defensive operations, and effects the various evolutions which he may direct, in relation to the position of the ship. The clues are stoppered, to keep the sails spread in the event of the sheets being shot away, and the yards are hung in chains, to obviate a like inconvenience from the cutting of the ties. The carpenter rigs the pumps to prepare for a leak, collects his shot-plugs to stop holes in the side, and fishes of wood to strengthen a mast, or yard, that may be wounded, and in danger of falling. The surgeon prepares, in the cockpit, to relieve the wounded. Tubs of water are collected in the tops, channels, and on deck, to be ready to extinguish fire; the decks are wet, to prevent the explosion of powder, and put out sparks that may fall there, and also sanded to prevent the men from slipping when splashy with blood or water. Finally, plenty of wads and shot, round, grape, and canister, are collected beside the guns, and the magazine is opened and lit by the gunner and his crew, who prepare to pass the cartridges to the powder-boys.

And now, having given three cheers, you bear down upon the enemy. It is a great object, in battering from ship to ship, to rake your enemy, if possible; that is, to get across his bow, or stern, out of reach of his guns, whilst yours sweep the whole length of his deck, with fatal execution. If it is desirable to rake your enemy, it is equally so to avoid being raked in return. This double advantage can only be attained by superior sailing, or by great skill in manœuvring. In directing your fire, it is best to aim between wind and water, and also in the direction of the masts, for in this way the enemy may be soonest disabled, and a victory gained with the least destruction of life. If, on the contrary, your own spars be so disabled that the enemy, having the worst in other respects, might yet effect his escape, from your inability to make sail in pursuit; or even in the more desperate case of your being every way worsted, you may yet profit of your situation to bear down and board, as the last alternative. In the cast of this last chance, a hopeless cause may sometimes be restored; for, in boarding, headlong valour, oftener than numbers, decides the struggle. When the enemy signifies that he yields, by hauling down his colours, a prize-master and crew are detailed; the prisoners are removed and chained, and as much exertion is made in repairing damages as was before exercised in effecting them.

Of all the naval battles, in ancient or modern times, none has ever been more obstinately contested than that which took place, during the American revolution, between the *Bon Homme Richard*, as she was called (after doctor Franklin's Poor Richard), and the British frigate Serapis. The first was commanded by commodore Paul Jones, the last by commodore Pearson, a very distinguished officer. The Richard carried fifty-six guns, and 380 men; the Serapis fifty-nine guns, and 320 men. The former was old and decayed, with a motley battery, throwing only 282 pounds at the single broadside, and twenty of her best men, with the second lieutenant, were absent during the whole action. The Serapis, on the contrary, was a new ship, of approved construction, considered the fastest sailer in the British navy; and, besides her superiority in number of guns, they were of heavy calibre, throwing 340 pounds at a single broadside. Jones, having borne down to cut off the Baltic fleet from the harbour of Scarborough, the Serapis and her consort stood out, to divert the attention of the American ships, and give the convoy time to escape. In this way the battle began. One of Jones's consorts engaged the consort of the Serapis; the other took no part in the action till towards its close, when it fired, with equal injury upon both. No guns were fired from either ship until they approached within pistol shot, when

Pearson cried out, "What ship is that?" This was at eight in the evening. The sky was beautifully clear, and the sea smooth;—the moon, just then rising, lit the combatants, whilst it enabled crowds of people, collected on Flamborough Head, to watch the progress of the battle. When commodore Pearson had waited in vain for an answer to his challenge, the Serapis opened a terrible fire upon the Richard. It was at once returned; but three of the Richard's heaviest guns burst at the discharge, not only becoming lost for the rest of the fight, but destroying more men than the whole broadside of the Serapis, and scattering death and confusion on every side. The battle had not continued long, ere Jones found that he was suffering so much from the Serapis being able, by her superior sailing, to choose raking positions, that he would soon have to yield if the contest continued so unequal; he therefore ordered his ship to be laid on board the Serapis. This manœuvre did not succeed, for the Richard could not bring a single gun to bear. Jones therefore backed his sails, and sheered off, when Pearson, thinking the American was about to yield, because his fire had ceased, asked him if he struck; to which Jones answered, that he had not yet begun to fight. He was not long, however, in making a commencement; for, having sailed by the Serapis, he once more put his helm up, and ran across her bow. Her jib-boom came over the Richard's poop, and Jones himself assisted the master in making the jib-stay, which had been shot away, and hung down upon his deck, fast to his mizzenmast. At the same time, the anchor of the Serapis hooked one of the Richard's ports, so that when presently Pearson anchored, to let his enemy sweep clear of him with the tide, both ships swung beside each other, the stern of the Richard to the bow of the Serapis, and their starboard sides so close together that the guns met, muzzle to muzzle; the rammers entered opposite ports, and were dragged from those who used them, who presently began assaulting each other. It is a singular proof of the coolness of Jones, that, while engaged with the master in making the vessels fast, he should have thought to check him for his profanity, saying, "Mr Stacy, this is no time for swearing; in the next moment you may be in eternity. Let us do our duty." Thus grappled, the two ships kept up a long and desperate struggle for victory. In battering, the superior metal of the Serapis gave her a decided advantage; her shot went through and through the rotten sides of the Richard, cutting the men in pieces, and destroying them with splinters. The rudder was destroyed; the quarter beat in; and while the water entered on every side, one of the pumps was shot away. There was already four feet water in the hold, and it was gaining. Upon this the carpenter, instead of concealing the ship's condition from all but the captain, cried out that she was sinking. The panic spread. The master-at-arms, moved by the supplications of a hundred British prisoners confined below, released them from irons; and the gunner ran terrified on deck, and bawling for quarter. Among the prisoners thus left at large, one of them, a shipmaster, crawled through the ports to the Serapis, and told captain Pearson to hold out, for he had begun to meditate a surrender. Nevertheless, Jones quickly recovered from his desperate position. He punished the cowardice of the gunner by throwing his pistols at him, one of which fractured his skull, and precipitated him down the hatchway. At the same time, he repulsed an attempt to board from the Serapis, and removed the danger of so many prisoners at large below by employing them at the pumps, and telling them to work or sink.

Whilst the battle had taken this unfavourable turn below, the face of affairs was reversed above, by the exertions of a few men stationed in the tops of the Richard. According to Jones's orders, they had just directed their fire into the enemy's tops, until not a man remained alive, except one in the fore-top, who kept loading his musket, and dodging, now and then, from behind the mast, to fire. This bold fellow was at length struck by a ball from the Richard's maintop, and sent headlong upon deck. And now the exertions of the sharpshooters were all turned to clearing the decks of the Serapis. Some of the bravest even passed, by the yards, into the tops of the Serapis, whence they threw stinkpots, flasks, and grenades down her hatches, stifling her men, and firing the ship in various directions. At this time, both ships having taken fire, the cannonade was suspended, to extinguish it. Jones soon renewed it, however, from some guns which alone remained in order on the forecastle, and which he directed himself. At the same time, a grenade, thrown from the Serapis's top, having bounded into the lower deck, and fired some loose powder, this communicated to the cartridges, which had been brought from the magazine faster than they were used, and lay carelessly upon the deck; and a general explosion took place, by which every man in the neighbourhood was blown to pieces, or dreadfully burned. No way remained for commodore Pearson to save the remnant of his crew, but to yield; but even this it was not easy to signify, for none of his crew would take down the flag, which had been nailed, before the action, to its staff; and he was compelled to perform the perilous and humiliating task with his own hand. Thus ended the battle of the Bon Homme Richard and Serapis. The victory was dearly bought, for the carnage on both sides was terrible. The Bon Homme Richard lost three hundred men, in killed and wounded; and nearly all the last died, from the indifferent care which they received, and the dreadful gale which followed the battle. The loss of the Serapis was nearly as great. Of the men who were blown up, some lingered until the flesh dropped from their bones, dying in excruciating agony. The Poor Richard, assailed by fire and water, was abandoned to her fate, and went down, carrying with her many of her wounded crew.

The battle of Trafalgar is a renowned instance of naval warfare by fleets. It occurred near Cadiz, between the allied French and Spanish fleets, of thirty-three sail of the line, and the British fleet, of twenty-seven sail. The force of the allies was far superior in ships, guns, and men, and they had a brave and skilful commander in admiral Villeneuve; but there were circumstances that more than counterbalanced the disparity. The Spaniards had no national interest in the struggle, and between them and the French there was no cordiality. The allied ships, too, had been hastily refitted, and, having just put to sea, were very inefficient; for their crews, belonging, as they did, to nations which had little commercial marine and few seamen, were made up, in a great measure, of soldiers, who had never been long enough embarked to get their sea legs. The British ships, on the contrary, were in the finest order; their crews had been actively employed during years of war; they were commanded by veteran officers, each a hero of many battles, all obeying one only admiral—Nelson of the Nile.

Having taken his station off Cadiz, Nelson waited the sailing of the enemy, who were ignorant of his force, and had determined to put to sea. October 19, 1805, the frigates in shore repeated the signal that the enemy were coming out; on the 20th, they were all at sea off Cadiz; and on the 21st, after much manœuvring, the two fleets came in sight, with a mutual determination to fight. This day had been a festival in the family of Nelson, because it was the anniversary of a victory gained by his uncle. To Nelson, whose peculiar mind was no stranger to superstition, the omen was most welcome. Yet, though he expected to win the battle that was about to be fought, he felt equally sure that he would not survive to enjoy it. He knew that his life would be aimed at by the Tyrolese sharpshooters of the enemy, and, far from dreading it, he seemed to desire to die in the moment of victory. He wore, as usual, his uniform of admiral, covered with stars and decorations, which could not fail to attract the bullets of the riflemen, and which filled his followers with apprehension. Yet it was in vain to ask him to remove them. Even when persuaded by Hardy to order other ships to pass ahead, he still carried all sail on the Victory, thereby rendering it impossible for the order to be obeyed.—The allied fleet formed their line of battle on the larboard tack, the wind being at south-west. Trafalgar lay to leeward, and the bay of Cadiz was open for escape. The ships were drawn up in a double line in close order, the intervals in the first line being filled by the ships of the second, with room to fire between. This combined the advantage of a dense, unassailable column, with a sufficient interval to obviate the danger of contact among the ships. Nelson bore down also in a double line, himself leading the left of fourteen ships in the Victory, and Collingwood in the Royal Sovereign, the right line of thirteen ships. His object was to break the line of the enemy in two points, separating and overpowering them in sections inferior to his own. Above all, he directed his captains to remember that his object was a close and decisive action; and that if his signals were not seen, no captain could go wrong in placing himself quickly and closely alongside an enemy. The wind was light, and the British fleet, under a crowd of sail, bore gallantly before it, rising and falling gracefully upon the long swell that rolled towards the bay of Cadiz. Nor was the array of the allies less noble and imposing, as they firmly awaited the approach of their enemies, drawn up in their double line, and with the sun shining full upon their white sails and frowning broadsides. The scene—the purpose—were full of sublimity; and to Nelson, who, independent of his thirst of glory, fancied that in destroying Frenchmen, he was about to serve humanity, this moment must have been the proudest of his life. As he gazed upon his anticipated prize, he asked captain Blackwood what he would esteem a victory. The answer was that, considering the noble manner in which battle was offered, the capture of fourteen sail would be a brilliant result. "I shall not," said he, "be satisfied with less than twenty." Presently Blackwood took leave, to return to his own ship, and expressed the hope soon to congratulate the admiral upon the accomplishment of his wish. Nelson pressed his hand affectionately, and said—"God bless you, Blackwood! I shall never see you again." And now, from the mast-head of the Victory was unfurled that eloquent signal—"England expects every man to do his duty!"—In consequence of the second column being steered more off the wind, at a less acute angle with the enemy's line, Collingwood came much sooner into contact with it; broke through it astern of the Santa Anna, firing raking broadsides on either hand as he passed, and engaging the Spaniard to leeward, at the muzzles of his guns. At the same time, three or four other ships gathered round, pouring their broadsides into the Royal Sovereign. "See," cried Nelson, "how that noble fellow, Collingwood, carries his ship into action!" And Collingwood, on his side, appreciating the feelings of his chief, was just then saying to his captain, notwithstanding the uproar and carnage,—"Rotherham, what would Nelson give to be here!"—Meantime Nelson was bearing down, exposed to a raking fire from all the ships under his lee, without being able to return a broadside. His secretary was killed beside him; directly after, a double-headed shot struck a party of marines drawn up upon the poop near him, killing eight of them; and in another minute, a shot passed between the admiral and captain Hardy. Each for an instant believed the other killed. At length the Victory, having run between two of the enemy's ships, opened both her broadsides with tremendous effect. Soon after, she ran on board the Redoubtable; which ship was closely engaged by the British Temeraire; and, another enemy having fallen on board of the Temeraire, the whole four lay desperately grappled, broadside to broadside. Whilst to the left the Victory received and answered the fire of the Bucentaure and Santissima Trinidad, on the right she depressed her guns so as not to send the shot through into the Temeraire. The Redoubtable let down her lower deck ports, for fear of being boarded through them, but kept up a fire from the upper batteries and from small-armed men stationed in the tops. From a generous though mistaken and Quixotic sense of humanity, Nelson made no use of small arms in the tops, either to clear the enemy's decks and pick off officers, or to silence the fire of their topmen. To this fault he owed his death; for after he had twice ordered the fire upon the Redoubtable to cease, because she seemed to have struck, a ball, fired from her mizzen-top, which was quite close to the poop of the Victory, struck his epaulette, and entered his back. He fell with his face upon the deck. Hardy turned round as some men were raising him.—"They have done for me at last, Hardy," said he. As they carried him down the ladder, he remarked that the tiller ropes had been shot away, and ordered them to be replaced. Then with his handkerchief he covered his features and decorations, desirous now to conceal from his crew, lest they should be disheartened, what he had been unwilling to hide from the enemy. Soon after he reached the cockpit, his wound was discovered to be mortal; he felt it himself, and insisted that the surgeon should leave him, to attend those whom he might yet save. He was in great pain, and intensely anxious to know how the battle went. "Will no one bring Hardy to me?" he asked. "He must be killed! He is surely dead!" At length Hardy came, and the two friends shook hands in silence. After a pause, the dying man faintly uttered, "Well, Hardy, how goes the day?"—"Very well; ten ships have already struck." Finding that all was well, and that no British ship had yielded, he turned to speak of himself. "I am a dead man, Hardy! I am going fast! It will soon be all over with me!" Hardy hoped that there was yet a chance of recovery. "O no! it is impossible. I feel something rising in my breast that tells me so." The surgeon asked him if he suffered much. He answered, so much that he wished himself dead. "And yet," he added, thinking, perhaps, of the new honours that awaited him, "one would like to live a little longer."—Captain Hardy, having been again on deck, returned, at the end of an hour, to his dying friend. He could not tell, in the confusion, the exact number of the allies that had surrendered; but there were at least fifteen; for the other ships had followed their admirals into action, breaking the enemy's line and engaging closely to leeward, in the same gallant style as the Victory and Sovereign. Nelson answered, "That is well;—but I bargained for twenty." And his wish was prophetic; he had not miscalculated the superiority of his followers; twenty actually surrendered. Having ordered the fleet to be anchored, he again spoke of himself.—"Don't throw me overboard.—Kiss me, Hardy." Hardy knelt down, and obeyed in silence. "Now I am satisfied.—Thank God, I have done my duty."—Hardy kissed him again, received his blessing, and then took leave of him for ever.

Of late years, the practice of naval warfare threatens to undergo a great revolution, from the introduction of steam navigation, and from the use of bombs, discharged horizontally, instead of shot from common cannon. Experiments have been tried on hulks, by bombs projected horizontally, with terrible effect. If the projectile lodged in a mast, in exploding, it overturned it, with all its yards and rigging; if in the side, the ports were opened into each other; or, when near the water, an immense chasm was opened, causing the vessel to sink immediately. If it should not explode until it fell spent upon deck, besides doing the injury of an ordinary ball, it would then burst, scattering smoke, fire, and death on every side. When this comes to pass, it would seem that the naval profession would cease to be very desirable. Nevertheless, experience has, in all ages, shown that, the more destructive are the engines used in war, and the more it is improved and systematized, the less is the loss of life. Salamis and Lepanto can either of them alone count many times the added victims of the Nile, Trafalgar, and Navarino. One effect of the predicted change in naval war, it is said, will be the substitution of small vessels for the larger ones now in use. The three decker presents many times the surface of the schooner, while her superior number of cannon does not confer a commensurate advantage; for ten bombs, projected into the side of a ship, would be almost as efficacious to her destruction as a hundred. As forming part of a system of defence for our coast, the bomb-cannon, mounted on steamers, which can take their position at will, would be terribly formidable.

When all nations shall be self-governed, and shall cease to exercise that injustice which almost invariably springs from the passions of individuals, then we may hope to realize the vision of an unbroken peace, and naval war, like every other, may be dismissed as barbarous. But, until that happy day arrives, our character, situation, and interests, all prompt us to watch over and improve our navy. Naval war may be carried on with infinitely less expense of life and money than war upon land. While a navy is impotent to the subversion of our liberties, it goes forth to meet the danger at a distance from our shores. Our fields are saved from desolation; our peaceful citizens are left to cultivate them, undisturbed by the turmoil of approaching war; and are spared from spoliation, slaughter, famine, pestilence, and all the crimes and their attendant curses, that follow in the train of armies. (See *Ship*, and *Navigation*.) We subjoin the following table of the various existing navies, in 1830. It may be remarked, that, in comparing the cost of British and foreign shipping, it is usual to estimate it by the tonnage; but this is a very false criterion; for while foreign ships are accurately measured, our ships are measured so that a vessel of 150 tons register generally carries 220 tons of a mixed cargo, and a vessel registered at 400 tons seldom carries less than 600. If this difference be taken into account, it will be seen, that the northern nations have no considerable advantage in the cheapness of their ships over the British, and it is generally admitted, and on good grounds, we believe, that ships built in the ports on the Baltic do not last so long as those built in this country.

Navy of	Class of Vessels.	In Commission.	In Ordinary.	Building.	Total.	Total of Officers and Men.	Annual Cost.
Great Britain,	Ships of the line	15	87	19	121	35,683	26,124,444
	Frigates	47	124	27	198		
	Sloops, brigs, &c.	122	42	54	218		
		184	253	100	537		
France,	Ships of the line	11	22	20	53	20,958	12,804,000
	Frigates	35	6	18	59		
	Sloops, schooners, &c.	155	8	35	198		
		201	36	73	310		
United States,	Ships of the line		7	5	12	6,345	2,879,283
	Frigates	5	5	7	17		
	Sloops	12	4		16		
	Schooners, &c.	3	4		7		
		20	20	12	52		
Russia,	Ships of the line	17	9	9	35		
	Frigates	12	10	12	34		
	Sloops of war, &c.	33			33		
		62	19	21	102		
Sweden,	Ships of the line		4	2	6		
	Frigates			1	1		
	Schooners and gun-boats			42	42		
			4	45	49		
Denmark,	Ships of the line				3		
	Frigates				6		
	Corvettes, schooners, &c				83		
Netherlands,	Ships of the line				7		
	Frigates, corvettes, &c.	30	23		53		
Spain,	Ships of the line	3	3		6		
	Frigates	8	4		12		
	Sloops, schooners, &c.	25	69		94		
		36	76		112		
Mexico,	Ships of the line		1		1		
	Frigates		2		2		
	Sloops, &c.		5		5		
			8		8		
Colombia,	Ships of sixty guns	1	1		2		
	Corvettes, &c.	2	3		5		
		3	4		7		
Brazil,	Ships of the line				1		
	Frigates				7		
	Corvettes, &c.				44		
					52		

Buenos Ayres has a brig of eighteen guns, and a few schooners. Chile has two small frigates, and a few smaller vessels. Peru has two sloops of war, and a few schooners. Hayti has a few gun-boats and *guarda-costas*.

NAXOS (in the most ancient times, *Dia*, and *Stongyle*; but now *Naxia*); the largest island (169 square miles, with 10,000 inhabitants) in the Greek department of the central Cyclades; lat. 37° 2′ N.; lon. 25° 30′ E. It contains a city of the same name (with 200 inhabitants), forty villages, a castle, a harbour, and is the seat of a Greek and a Catholic bishop. Its extraordinary fertility, and the fable of Bacchus, to whom it was consecrated, made it celebrated in antiquity. The ruins of a temple of Bacchus are still to be seen near the fountain of Ariadne. It abounded in grain, wine (which was considered the best in Greece), excellent fruits, and marble, of which the kind called *Ophaltes*, or *Ophites*, was much used. This marble hardens in the air, and stands for centuries undecayed. The inhabitants ascribed the uncommon fertility of the island, on account of which it was often called *Little Sicily*, to the influence of Bacchus, its guardian deity. Festivals in honour of Bacchus, to whom altars and temples were dedicated, were celebrated here. It was here, also, that the deity consoled Ariadne, when deserted by Theseus. The first inhabitants of the island were said to have been Thracians, who were afterwards subdued by the Thessalians, under the command of Otus and Ephialtes. The Thessalians having deserted the island, on account of the continual drought, the Carians are said to have taken possession of it, shortly after the Trojan war, under a leader named Naxos. Pisistratus reduced the island to dependence on Athens. After the death of Pisistratus, Naxos regained its freedom, and was extremely flourishing, but, soon after, shared the fate of most of the islands of the archipelago, and fell under Persian domination. But, when Xerxes attempted to subdue Greece itself, the Naxians took this opportunity of recovering their freedom in the battle of Salamis and Platæa. During the Mithridatic war, the island was subjected to the Romans. The triumvir Antony then placed it under the protection of the Rhodians, but withdrew it, on account of their abuse of their power. It remained in a state of freedom till the time of Vespasian, who reduced it to a Roman province. It afterwards shared the fate of the Roman empire of the East, and fell, with the remaining islands of the archipelago, into the hands of the Turks, who retained possession of it until it was attached to the new Greek state.

NAYLER, James, an English Quaker of the seventeenth century, remarkable for his enthusiasm and sufferings, was the son of an industrious small farmer, near Wakefield, Yorkshire, where he was born in 1616. He had a good natural capacity, and was taught to read and write. At the age of twenty-two, he married, and removed to Wakefield, where he remained until the breaking out of the civil war, in 1641. He then entered the parliamentary army, in which he served eight years. Returning home, he remained there until 1651, when the preaching of George Fox made him a convert to Quakerism. In the beginning of the following year, he imagined that he heard a voice calling upon him to renounce his father's house, and become an itinerant preacher. He attended to this fancied inspiration, and soon distinguished himself among those of kindred sentiments, both in London and other places, until, in 1656, he was committed to Exeter jail, for propagating his opinions. At this time, his own enthusiasm, and the extravagant admiration of some female followers, seem to have produced an incipient derangement, which induced Fox, and the more formal body of Quakers, to disown him. On his release from imprisonment, he repaired to Bristol, where his followers formed a procession, and led him into that city in a manner which they intended to resemble the entrance of Christ into Jerusalem. For this, Nayler, and several of his partisans, were committed to prison and afterwards sent to London. He was declared guilty of blasphemy by parliament, and sentenced to a double whipping at different times, branding, boring of the tongue with a hot iron, and imprisonment and hard labour during pleasure. This sentence was illegal, the house of commons not being possessed of any power beyond that of imprisoning during the session. It was, however, fully inflicted upon the unhappy man, who ingenuously acknowledged the extravagance of his conduct; and, having afforded satisfactory evidence of his contrition, upon his enlargement, was again received into the communion of the Friends. He died in 1660, in the forty-fourth year of his age. Nayler uttered, on his death-bed, sentiments of resignation, which exhibit an intensity of feeling, and a beauty of expression, that show him to have possessed no common mind. His writings were published in a single volume.

NAZARENES; a name sometimes given to the first Christians by their adversaries, and, even to this day, there exist, in Eastern Asia, some Christian congregations under this name.—The sect of Nazarenes, which originated as early as the second century, in Palestine, believed it was necessary to unite the Jewish ceremonial law with the precepts of Jesus, and refer to a Hebrew Gospel of Matthew. The Ebionites (the poor) went still further in the observance of the Mosaic law, rejected, at the same time, the Epistles of St Paul, and doubted the divinity of Christ, whom they considered but a perfect man. Like the Nazarenes, with whom they have a common country and time of origin, but are by no means to be confounded, they had a Hebrew original Gospel. Both sects were unimportant, and seem to have ceased in the fourth century.

NAZARETH, or NASRA; a town in Syria (Palestine), in the pachalic of Acre; fifty miles North of Jerusalem; lat. 32° 42′ N.; population, about 2000, mostly Christians. It has an old castle, a Greek church, a Catholic convent, with twelve or fourteen friars. It consists of a collection of houses scattered irregularly near the foot of a hill. It is memorable for having been the residence of our Saviour and his family during the first thirty years of his life. It was once the see of an archbishop, removed to Monte Verde, in Italy. Nazareth held the third rank among the metropolitan cities dependent on the patriarch of Jerusalem. The Hebrews continued to inhabit it in the time of the Romans, till the reign of Constantine; and after that epoch, it passed alternately from the Christians to the Saracens. Here are many places reputed holy, to which pilgrims are conducted. The church attached to the convent is handsome, and is erected over a cave, which is asserted to have been the residence of the Virgin Mary. When the plague rages here, the sick come eagerly to rub themselves against the church hangings and pillar, believing thus to obtain a certain cure. The monks show, also, the workshop of Joseph, and the precipice where Christ is said to have saved himself from the fury of the multitude; also, as the most venerated object, the table of Christ, being the stone on which it is pretended that he ate before and after his resurrection. In a valley near it is a spring, denominated by the early pilgrims the "fountain of the Virgin Mary."

NAZARITES, among the Jews; persons who devoted themselves to the peculiar service of Jehovah, for a certain time or for life. During their vow, they did not cut their hair, or drink any strong drink, or approach a dead body. It was foretold of Samson, that he should be a Nazarite unto God from the womb. So Hannah vowed her first born son (Samuel) to Jehovah all the days of his life, with the promise that no razor should come near his head. The law of the Nazarites (from the Hebrew *nazar*, to separate) is contained in Numbers, vi. 1—21.

NEAL, Daniel, an English dissenting divine, and historian of the Puritans, was born in London, Dec. 14, 1678. In 1697, he entered as a student in a seminary conducted by Mr Roe, a dissenting minister, after which he studied at the university of Utrecht. On his return to London, in 1703, he began to officiate as a preacher, and, in 1706, succeeded doctor Singleton as minister of a congregation in Aldersgate street. Although assiduous as a minister, he found leisure for literary labours, and, in 1720, published his History of New England (2 vols. 8vo); and, soon after, a Narrative of the Method of Inoculating for the Small-Pox in New England. In 1732, he sent into the world the first volume of his History of the Puritans (8vo), the second, third, and fourth appearing in 1733, 1736, and 1738. This work called forth a Vindication of the Doctrine, Discipline, and Worship, of the Church of England (8vo), from doctor Maddox, bishop of St Asaph, to which Neal published a reply, entitled a Review of the principal Facts objected to, &c. His remaining volumes were reviewed by doctor Grey, to which an answer appeared in a new edition of Neal, 1797 (5 vols. 8vo), by doctor Toulmin. He died at Bath, in April, 1743, in the sixty-fifth year of his age, leaving a high character, both as a writer and a divine.

NEAPED; the situation of a ship which is left aground on the height of a spring tide, so that she cannot be flooded off till the return of the next spring.

NEAPOLITAN REVOLUTION. See *Naples, Revolution of.*

NEAP TIDES are those which happen when the moon is nearly at the second and fourth quarters. The *neap* tides are low tides, in respect to their opposites, the *spring* tides.

NEARCHUS; one of the captains of Alexander the Great, who was employed by that conqueror in conducting his fleet from India by the ocean to the Persian gulf. This expedition proved so tedious and fatiguing, that the leader, on his return, was not recognised by his friends, until he had made himself known. His service was so much esteemed, that he was crowned with a garland by Alexander at Susa. Fragments of his relation are extant, and form a curious and valuable record. It may be found among the *Geographi Minores* by Hudson. Vincent also published these fragments, with dissertations and a commentary (London, 1797).

NEBUCHADNEZZAR, or NABUCHODONOSAR, a king of Babylon, who reigned from 606 to 563 B. C., was the son of Nabopolassar, by whom the kingdom of Babylon was restored to its independency of the Assyrian monarchy. Nebuchadnezzar, by his conquests, extended the Babylonian power to the western limits of Asia. He defeated the Egyptian Pharaoh Necho, at Carchemish, captured and destroyed Jerusalem, Tyre, and Sidon. According to the policy of Asiatic conquerors, who transplanted the conquered nations of a turbulent character, he removed to Babylon a great number of the Jews, whose residence there is called the *Babylonish captivity*. Babylon was indebted to him for its magnificence. The Scripture account of his becoming an ox, for seven years, is by some understood to mean that he was afflicted with the disease called *lycanthropy* (q. v.); by others, to be susceptible of an allegorical interpretation.

NEBULA. The name of *nebulæ* is given to certain little spots, resembling white clouds, which are seen in the starry heavens, and which, as observed through the telescope, present three kinds of appearances. These appearances are either that of single stars, enveloped in a nebulous veil, or of groups of little stars, or only of a glittering cloud. The last are the proper nebulæ, which astronomers consider as systems of fixed stars, of which there may be innumerable multitudes in infinite space. Herschel, who spent much time in observing them, and has described them in his Catalogue of One Thousand new Nebulæ (London, 1786, 4to), does not consider them all as groups of stars. At present, as many as two thousand are known. Bode's Introduction to a Knowledge of the Starry Heavens (in German, Berlin, 1823, 9th ed.) treats of them at length.

NECESSITY; the quality of that which cannot but be, or cannot be otherwise. It is conceived in three different relations: 1. logical necessity, which consists in the circumstance that something cannot be conceived different from what it is, because the contrary is contradictory or absurd. 2. Physical necessity is that necessity which arises from the laws of the material universe. The *necessary*, in this respect, is opposed to the *casual*. Every thing in the sensible world has but a conditional necessity: it is necessary from some cause, so that we are led back to the primitive cause, to the Supreme Being, who is said, therefore, to be the only absolutely necessary, independently existing Being, so that metaphysicians say, with him absolute necessity and liberty are one thing. This will be more easily understood, if we consider more closely the meaning of necessity. In its general application, it presupposes a cause, which forces the thing to be such as it is, while, in this case, its meaning lies in the non-existence of a cause, and the Supreme Being who exists and acts without a cause, must be supposed to exist and act from necessity. 3. Necessity as to the volition and action of man—moral necessity—the great question, whether liberty of volition and necessity can exist together, and if so, in what manner, is the most intricate point of ethics and philosophy in general, and has been treated of in all ages and in all modes, in reference to morals and religion. In fact, it involves the whole relation of man to God. The Catholic theologians distinguish several kinds of necessity as to the means of salvation: they say baptism is absolutely necessary, because, without it, whether the want of it is owing to the fault of the individual or not, no one can be saved, while a person who cannot possibly receive the eucharist would not be punished, though he would deserve damnation if he should refuse it where he could receive it.

NECHO; one of the Pharaohs. He is mentioned in the Scriptures as the conqueror of Josiah, who fell in the battle of Megiddo, in attempting to check the progress of the Egyptian forces against Assyria. A few years later, he is described as making war upon Nebuchadnezzar, and experiencing a complete defeat at Carchemish. The documents of Egyptian and profane history show him to have been Necho II., son and successor of Psammeticus. Herodotus describes him under the name of Necho (ii. 158, 159), and relates, though with some inaccuracies, his war in Judea. Champollion has read the name upon many statues.

NECKAR; a river of Germany, which rises in the Black Forest in Wurtemberg, near one of the sources of the Danube, and flows into the Rhine at Manheim, after a course of about 150 miles. It is navigable for small boats to the influx of the Enz. The Neckar wines are light, sound, and of an agreeable flavour.

NECKER, James, minister of finance to Louis XVI., was born in 1734, at Geneva, where his father was professor of German public law, and went to Paris to enter the banking-house of his uncle M. Vernet. His attention and intelligence gained him the confidence of M. Thélusson, with whom he formed a partnership in the banking business. In the course of twelve or fifteen years, he became one of the richest bankers. Advantageous contracts with the East India company, and speculations in the British funds, in anticipation of the peace of 1763, of which he had received early notice, greatly increased his fortune. The East India company, of which he was a member, having chosen him to manage their cause with the government, he published a work on the subject (1769), in which he enumerated the services rendered by them to the state in different emergencies. His adversaries were Morellet and Lacretelle, who, attacking exclusive privileges, and demanding free trade, had the popular side of the question. Necker, however, gained many adherents, and even his errors did not prevent justice being done to his talents. He now retired from business, and received the post of resident of the republic of Geneva at the French court, in which he became favourably known to the duke de Choiseul. Ambitious of literary distinction, he produced his *Eloge de Colbert*, which gained the prize of the French academy. His *Essai sur la Législation et le Commerce* *des Grains* (1775) attracted great attention, and was violently attacked by the Economists (see *Physiocratic System*), as it was in favour of some restrictions on the exportation of corn. In spite of an inflated and incorrect style, and a vagueness of thought, his writings pleased the mass of readers, on account of the popular manner in which he treated affairs of finance. He gained the marquis of Pezay, who carried on a secret correspondence with Louis XVI., to his views, and, through him, transmitted to the king a memorial, in which he drew an altogether too favourable picture of the resources of the state. This measure accelerated his elevation. Towards the end of 1776, he was joined with the controller-general Taboureau as director of the royal treasury, and, in eight months after, took Taboureau's place. Maurepas, who, notwithstanding his great age and apparent indifference, was fond of the exercise of power, favoured Necker's advancement, in the expectation of finding a submissive servant in a man whose birth and religion would create him enemies among the nobles and clergy. Necker assumed his post in a difficult moment. Malversation, under the preceding reign, had caused a great deficit, to which the American war made great additions. New taxes would have been unpopular, and Necker endeavoured to meet the exigency by loans and reforms But the partisans of Turgot, whom he had alienated by his sentiments relative to the corn trade, found fault with his innovations. Turgot himself took part in the controversy: Necker was accused of an excessive preference for the *caisse d escomte :* the abolition of the office of receiver-general was blamed as an act of bad faith, calculated to place the king under the dictation of the financiers; that of the director of the treasury, as the revival of a project of Law, whose name awakened the worst recollections, &c. The plan of convoking provincial assemblies displeased the parliaments, which it threatened to reduce to mere judicial tribunals. Necker, however, found many defenders, particularly among men of letters. In 1781, he published his *Comte rendu au Roi*, relative to his administration: more than 200,000 copies of this pamphlet were circulated. He was not, however, admitted to the common deliberations of the ministers, and Maurepas, who was jealous of Necker's reputation, succeeded in frustrating his plans, although they were approved by the king. Necker then demanded the *entrée au conseil*, as it was called. Some objection being made on account of his religion, he threatened to resign his place, and was not a little astonished to receive permission to retire (May, 1781). He went to Switzerland, where he purchased the barony of Copet, and published his work *Administration des Finances* (3 vols.), of which 80,000 copies were sold in a few days. His enemies accused him of undermining the foundations of the monarchy, by exposing the secrets of government, and of exchanging the character of counsellor of his prince for that of a tribune, by appealing from the king to the people. The errors and prodigality of Calonne increased Necker's reputation: the latter returned to France, in 1787, wrote against Calonne, who had accused him of being the author of the deficit, and was exiled in consequence. But, in 1788, when the attacks upon the minister of finance, Brienne (see *Loménie de Brienne*), began to alarm the court, Necker was recalled as controller-general, and accepted the post on condition that he should not be obliged to transact business with the premier. His convictions led him to support the convocation of the states-general, which was the wish of the nation. His report (of Dec. 27, 1788) on this subject may be considered the spark which kindled the pile. He was also in favour of the double representation of the third estate (see *France*), but neglected to regulate the mode of deliberation and of voting. In 1789, his enemies accused him of having contributed to produce the famine, by the expression of unfounded fears. They maintained that, of thirty-nine millions of francs expended in the purchase of corn, twenty-eight millions had been replaced by its sale, and that of this sum he had given no account. He was even charged with having applied it to the furtherance of his own ambitious views. May 5, he delivered a long speech, on the opening of the states-general, and laid down a plan for the labours of that body, which he expected to yield at his will. When the government determined to take measures against the increasing troubles, Necker, who opposed the adoption of those measures, was dismissed, mainly through the influence of baron Breteuil, and ordered to leave the kingdom within twenty-four hours. No sooner was his removal known than all Paris was in a ferment. The storming of the Bastile followed, and the symptoms of popular violence became so alarming, that the king found himself compelled to recall the banished minister. Necker received the news of his recall at Basle, and determined to comply with it: his return to Paris resembled a triumphal procession. His first object was to restore tranquillity, and security of person and property. But, as minister of finance, he was obliged to propose measures which could not be acceptable to the populace. His moderate opinions, in regard to the administration of government, did not keep pace with the wishes of those who dictated to the people. Mirabeau, in particular, whose character rendered him more fit to rule the popular will, undermined Necker's influence. In the deliberations on the plan of a new constitution, he defended the royal *veto*, and opposed the abolition of titles of nobility: he also proposed the establishment of a national bank. When the national assembly made public the contents of the red book (the private list of the royal pensions and grants), Necker declared warmly against this measure, and defended the list. These opinions exposed him to the charge of being an aristocrat: his personal security was threatened, and his influence annihilated. His plan of a loan at four and a half per cent. failed. Under these circumstances, he wrote to the assembly, in September, 1790, requesting his dismissal. He offered to place in their hands the two million livres which he had advanced to government, together with his house and appurtenances, as a pledge of his integrity. His offer was received without any marks of regret, and he left Paris with the mortification of seeing his plans and brilliant prospects fail. His daughter, madame de Stael, has given the most favourable view of his character as a statesman in her *Considérations;* but Bailleul in his *Examen critique* of that work has demonstrated the feebleness of Necker's policy. He returned to Copet, amidst the insults of the people, and his chagrin was heightened by domestic calamities. After the loss of his wife (see *Neckar, Susanna*), to whom he was much attached, he occupied himself in writing a defence of his administration, *Sur l'Administration de M. Necker par lui-même.* In his work *Réflexions adressées à la Nation*, he defended the king. His essay *Du Pouvoir exécutif dans les grands Etats* (2 vols. 1792) is approved even by those who are not favourably disposed towards him. His *De la Révolution Française* (1796, 4 vols.) is a work of much interest; and his *Cours de Morale religieuse* (1800, 3 vols.), and *De l'Importance des Opinions religieuses* (1788), are not destitute of eloquence. He died at Geneva, in 1804.

NECKER, Susanna, wife of the minister, daughter of a clergyman of the canton of Berne, by the name of Curchod, received an excellent education, and, in her youth, was the object of the attachment of Gibbon. Having accompanied madame de Vermenoux to Paris, as Latin instructress of her son, Miss Curchod there became acquainted with Necker, to whom she was married in 1765. Madame Necker was of a most excellent character, and, under all circumstances, a tender, affectionate, and faithful wife, mother, and friend. Her heart was not less carefully cultivated than her mind; and on her husband's elevation, she made use of his influence and fortune only for purposes of benevolence and kindness. She erected an hospital, in the neighbourhood of Paris, at her own expense, and devoted to it her personal care. She had many friends among the men of letters, particularly Thomas, Buffon, and Marmontel, who has given an accurate account of her. She died in 1794. Madame Necker is the author of several works—*Des Inhumations précipitées* (1790); *Mémoire sur l'Etablissement des Hospices*, and *Réflexions sur le Divorce*. After her death, appeared *Mélanges*, (1798), and *Nouveaux Mélanges* (1801).

NECROLOGY (from νεκρος, dead, and λογος, word, &c.) signifies, in monasteries and cathedrals, the records of those bishops, canons, and others, who have made grants to the church, &c. Each one's record is read on the anniversary of his death, with prayers for him. Formerly, also, what is now called *martyrology* was called *necrology*. The biographical notice of a deceased person is likewise called *necrology*.

NECROMANCY (from νεκρομαντεια, or νεκυομαντεια); the divination of the future, by questioning the dead. (See *Divination*.) This, like many superstitious rites, originated in the east, or the extreme north, and is of the highest antiquity. Some have, indeed, maintained that it was not brought from Egypt or Persia to Greece, but originated in the last country; but it is difficult to prove this. We find mention made of necromancy in the Old Testament; for instance, in the first book of Samuel (i. 18), and in Deuteronomy (xviii. 11), where it is forbidden. In the eleventh book of the Odyssey, Homer has made Ulysses raise the shade of Tiresias from the infernal regions. The rite, as there described, contains nothing magical, and consists merely in the performance of a sacrifice with peculiar solemnities. This description of Homer proves that necromancy was common in Greece before his time. In many parts of Greece, there were oracles of the dead, the origin of which is lost in the obscurity of history. The fable of the descent of Orpheus to Hades is, by some, considered to refer to this species of necromancy. Indeed, it is very doubtful whether the expression used of many of the Greek heroes, that they descended to the infernal regions, means any thing more than that they consulted an oracle of the dead. While, in the rest of Greece, necromancy was practised in the temples by priests, or other religious persons, individuals called ψυχαγωγοι (evokers of spirits) practised it in Thessaly, the native country of magic, and made use of magical practices. In later times, these practices became horrible, for magicians, ascribing a superior power to human blood, and every thing which came from the gibbet or the grave, were led to the most revolting and disgusting acts. They tore men, half burned, from their funeral piles, buried others living, ripped out unborn babes from the wombs of their mothers, and committed other similar enormities. They frequently butchered men, in order to consult their spirits before they had time to hasten down to the regions of the dead. In case the invoked spirits (and this was the ancient and usual custom) actually presented themselves to the exorcist, necromancy was also called σκιομαντεια, and ψυχομαντεια, that is, divination by shades (σκιαι), or departed souls (ψυχαι). After the total downfall of paganism, men were satisfied with a kind of necromancy by which they merely caused the voices of the dead to be heard from their graves.

NECROPOLIS (from νεκρος, dead, and πολις, city); the city of the dead. This name is given, in particular, to the ancient cemeteries, which, in the neighbourhood of some of the great cities, are very extensive, and filled with magnificent remains. It has also been given to some modern cemeteries, as at Glasgow, Liverpool, &c.

NECTAR, in the Grecian mythology; the drink of the gods, which seems never to have been given to mortals. A beverage, made of honey and sweet wine, was also called *nectar*; and a sweet wine of Scio, made of half-dried grapes, still bears the same name.

NECTARINE. This fruit seems to differ from the peach only in having a smooth skin, and it is even found occasionally growing upon the same tree. The tree, in its foliage, parts of fructification, wood, and growth, is entirely similar to the peach.

NECTARY, in botany; that part of the flower which yields the honey.

NEDSHED. See *Arabia*.

NEEDLE, MAGNETIC. See *Magnet*, *Magnetic Needle*, and *Compass*.

NEEDLE-STONE. See *Zeolite*.

NEEF, or NEEFS, PETER, the elder, an eminent artist, was born at Antwerp, in 1570. He painted the interiors of churches and temples with surprising neatness and delicacy. To avoid the monotony attendant upon such a style, he introduced a variety of objects; and, by a good management of the *chiaroscuro*, he gave a lively and animated effect to what, otherwise, would have been tame and uninteresting. As he was but an indifferent designer of figures, some of his pictures are decorated with those of Velvet Brueghel, Teniers, and others. He died in 1651.—His son *Peter*, the younger, painted similar subjects, but they are deficient both in neatness and correctness.

NEELE, HENRY; an ingenious English poet and novel-writer, who died, by his own hand, February 9, 1828, in a fit of insanity, supposed to have originated from too intense application to study. He was the son of an engraver, and was educated for the profession of a solicitor, which he practised, with reputation, in London, till his death. He was a man of amiable disposition, and highly respected by his acquaintance. Among his publications are Poems; Dramatic Scenes; and the Romance of History (3 vols. 12mo), a series of tales relating to persons and events mentioned in the English annals. His Literary Remains have been published since his death (1 vol. 1829).

NEER, ARNOLD VAN DER, an eminent artist, was born at Amsterdam, in 1619. He excelled in painting views in Holland, cottages, or fishermen's huts, and in his beautiful delineation of the effect of moonlight. He was a perfect master of the *chiaroscuro*. His sunsets are excellent; nor was he less successful in painting water pieces, in which he is only surpassed by Cuyp. He died in 1683.—His son *Eglon Hendrick Van der Neer* was born in 1643, and was an historical and portrait painter. His pictures of conversations and gallant subjects are most admired; they are well coloured and highly finished. He was employed, for some time, by the elector palatine at Dusseldorf, where he died in 1703.

NEERWINDEN; a village in the province of Brabant, kingdom of Belgium, sixteen miles from Louvain. In 1693, the marshal of Luxembourg gained a victory here over the allies under William III., king of Britain. In 1793, the French, under Dumouriez, were defeated here by the Austrians.

NEGATIVE (from the Latin *negare*, to deny; hence a *negative* answer is a *denying* answer). In philosophy, every thing is called *negative* which, without determining any thing itself, only excludes something else (the *positive*). Thus, for instance, *man, black, wise*, are positive ideas; they mean something direct, and it is not necessary to arrive at their meaning by the intermediate process of excluding something else. While, if we say a thing is *not a man, not black, not wise*, nothing is determined. A thing which is "not a man" may be a book, air, water. Hence we see that the *negative* notion always requires something *positive*, which it excludes, or *negatives*. It is necessary, however, to remark here, that in all languages, certain words which expressed, originally, negative notions, having received a positive meaning, as no one thinks of them any longer as merely excluding ideas of a positive character. For instance, *innocent, illegible, fearless*—these words are, in their meaning, as positive as the terms *pure-hearted, badly-written, brave*. Every term may be considered as negative, in reference to notions other than those which it conveys, since it excludes them.

Negative and *positive quantities*, in mathematics, are such as are, respectively, greater or less than nothing. Thus, if we call a man's debts, when they much exceed his property, *positive*, we must call his property *negative*; or, if we call the former *negative*, we call the latter *positive*. If we suppose one of the legs of an angle movable round the vertex, we may represent all possible angles, and on both sides of the immovable leg; those on one side are *positive*, those on the other *negative*. The same relation exists, in mechanics, between power and weight; in statics, between pressure and resistance, &c. The higher arithmetic extends the application of the fundamental rules to the negative and positive quantities; which application forms the basis of algebra. Negative quantities are designated by $-$, and positive ones by $+$, so that $-4+4=0$.

NEGATIVE PREGNANT, in law, is a negative which implies, or brings forth, an affirmative.

NEGRO (Latin *niger*, black); a race or variety of the human species deriving their name from one of their most striking characteristics, their black colour; called, also, the *Ethiopic race*. (See *Man*.) Their native region seems to be the central portion of Africa, though some tribes of the negro variety have been found in America and the South Sea islands. The negro formation prevails in Western Africa in the region of the Gambia and Senegal; extending southwards, it is most strongly marked in Guinea, and passes gradually over into the Caffre and Hottentot formation. In Eastern Africa, it commences to the south of Abyssinia; prevails in Zanguebar and Monomotapa, though not in general pure. Of the tribes in the more central part of Africa little is known. (See *Nigritia*.) The heat of the climate, in all these regions may have some effect upon the tint of the skin, but is by no means the only or the principal cause of the black colour, since, under the same climates of the torrid zone, there are found all shades of complexion. White men in Africa only become somewhat swarthier, but never black, even in a succession of generations, unless they intermingle with the negroes; and blacks, in other regions and climates, are not found to lose their native hue. The seat of the black colour is the *rete mucosum*, and the external surface of the true skin (*cutis*); and when the *rete mucosum* is destroyed, as by disease, &c. (see *Albinos*), the colour is lost: so, in parts of the body where the epidermis is unusually thick (the palms of the hand and the soles of the feet), it is of a lighter shade. Negroes are also distinguished from the other races by other external, and by some anatomical peculiarities, particularly in the conformation of the cranium. The projection of the whole visage in advance of the forehead; the prolongation of the upper and lower jaws; the small facial angle (see *Face*); the flatness of the forehead, and of the hinder part of the head (*occiput*), and the compression in the direction of the temples, allowing less space for the brain than in some other varieties; the woolly, frizzled hair; the short, broad, and flat nose; the thick, projecting lips, with many other peculiarities of formation, constitute some of the characteristics of the negro or Ethiopic race. The African tribes of this variety have, in general, elevated themselves so far above the simple state of nature, as to have reduced the lower animals to subjection, constructed settled habitations, practised a rude agriculture, and manufactured some articles of clothing or ornament. In political institutions they have made no advance, their governments being simple despotisms, without any regular organization. Their religion is merely the instinctive expression of the religious feeling, in its lowest form of fetichism. (See *Fetich*.) Their languages are described as extremely rude and imperfect; almost destitute of construction, and incapable of expressing abstractions. They have no art of conveying thoughts or events by writing, not even by the simplest symbolical characters. The negro character, if inferior in intellectual vigour, is marked by a warmth of social affections, and a kindness and tenderness of feeling, which even the atrocities of foreign oppression have not been able to stifle. All travellers concur in describing the negro as mild, amiable, simple, hospitable, unsuspecting, and faithful. They are passionately fond of music, and they express their hopes and fears in extemporary effusions of song. The opinion formerly maintained, that they were of an inferior variety of animals, would not now find an advocate, or a convert, even in the ignorance or the worst passions of the whites. Whether they are capable of reaching to the same height of intellectual cultivation as the Europeans, is a question which we need more facts to decide. (See *Civilization*.) The most eloquent defender of the negroes is the abbé Grégoire, in his work *De la Littérature des Nègres, ou Recherches sur leurs Facultés intellectuelles, leurs Qualités morales*, &c. See the articles *Africa, Physiology, Philology, Slavery*, &c.

NEGROPONT, or EGRIPO (the ancient *Eubœa*); an island in the Archipelago, separated from the continent by the narrow strait formerly called *Euripus*, over which there is a bridge 200 feet long. The modern name seems to be a corruption of *Egripos*, the name of the capital (the ancient *Chalcis*), which is probably derived from that of the strait on which it lies. The superficial area is 1610 square miles; the population, previous to the Greek revolution, amounted to 60,000, among whom were 40,000 Greeks. Its soil is fertile, yielding corn and various fruits in abundance; wine, oil, honey, and silk are also produced. The mountains in the interior are lofty, and their summits are covered with snow during six months in the year. The capital is Egripos, or Negropont. The castle of Carysto, on the southern extremity of the island, over against Athens, by its position at the entrance of the straits, commands the whole island, and also the province of Attica. In 1821, Eubœa raised the standard of revolt, at the call of the beautiful Modena Maurogenia, a young lady descended from a princely family of the island, and whose father had been strangled by the Porte. She fitted out two ships from Myconi, with a supply of arms for the inhabitants of the island, and offered her hand, as the reward, to any free Greek who should conquer the Turks. Seventy-two villages were soon in arms, upon which the Turks retired into Egripos and Carysto, which were closely blockaded by the Greeks.

NEGUS; a drink, made of wine, water, sugar, nutmeg, and lemon-juice; so called from colonel Negus, the inventor.

NEHEMIAH; a distinguished and pious Jew, who was born in captivity, but was made the cupbearer of Artaxerxes Longimanus. He used his influence for the welfare of his unhappy countrymen, and became their benefactor. At his own request, he was sent, as governor, to Jerusalem, with a commission to rebuild the walls and gates of this city. He accomplished his purpose, but not without difficulties, arising partly from the poverty of the lower classes of the people, and partly from the opposition of the Moabites and Ammonites. He then took measures to raise the city to its former splendour, and to increase its population. He and Ezra were the proper founders of the Jewish liturgy, and a collection of the holy books was made under their inspection. Nehemiah published an account of the same in a book which is admitted into the Jewish canon, and is supposed to be a continuation of the narration contained in the book of Ezra. It includes a period of forty-nine years.

NEITH, or NEITHA; one of the later goddesses of the Egyptians, whose worship flourished at Sais, in Lower Egypt, and who was considered as its founder and protectress. Plato calls her, in Timæus, the *Athena of the Greeks*. A colony from Sais is said to have brought the worship of Neith to Athens. She appears, in later times, to have become identified with Isis. The splendid temple at Sais, which was illuminated on her yearly festival, bore this sublime inscription:—"I am all that has been, that is, and that will be; and no man hath ever lifted my veil. The sun was my child." See *Hieroglyphics*, division *Egyptian Mythology*.

NELSON, Horatio; a celebrated naval officer, who was born, September 29, 1758, at Burnham Thorpe, in Norfolk, of which parish his father was rector. At the age of twelve, he entered the navy, as a midshipman, and, in 1773, accompanied commodore Phipps (see *Mulgrave*) in an expedition towards the north pole. In 1777, he was made a lieutenant, and, in 1779, raised to the rank of post-captain. He distinguished himself in an attack on fort Juan, in the gulf of Mexico, and on other occasions, and remained on the American station till the conclusion of peace. He afterwards commanded the Boreas frigate, and was employed to protect the trade of the Leeward islands. On the commencement of the war with the French republic, he was made commander of the Agamemnon, of sixty-four guns, with which he joined lord Hood in the Mediterranean, and assisted at the taking of Toulon, and at the siege of Bastia. At the siege of Calvi, he lost an eye. In the battle off cape St Vincent, February 13, 1797, he commanded the Captain, on board of which he attacked the Santissima Trinidada, of 136 guns; and, passing to the San Nicholas, of eighty guns, and the San Joseph, of 112, he obliged both those ships to strike their flags. For his gallantry, he was made a knight of the Bath, rear-admiral of the blue, and appointed to the command of the inner squadron at the blockade of Cadiz. His next service was an attack on the town of Santa Cruz, in the island of Teneriffe, in which he was unsuccessful; and, being severely wounded, his life was saved by his son-in-law, captain Nesbit, who, at great personal hazard, conveyed him to a boat. He was obliged to suffer the amputation of his right arm, in consequence of which he obtained a pension of 1000 pounds. In 1798, he joined lord St Vincent (admiral Jervis), who sent him to the Mediterranean to watch the progress of the armament at Toulon. Notwithstanding his vigilance, the French fleet, which conveyed Bonaparte to Egypt, escaped. Thither Nelson followed, and, after various disappointments, he discovered the enemy's fleet moored in the bay of Aboukir. Having, by a well executed manœuvre, obliged them to come to action, he obtained a most complete victory, all the French ships but two being taken or destroyed. This achievement was rewarded with the title of *baron Nelson of the Nile*, and a pension of 2000 pounds, besides the honours conferred on him by the grand seignior. His next service was the restoration of the king of Naples, which was accompanied with circumstances of revolting cruelty, which may be attributed to the influence of lady Hamilton (q. v.), the wife of the English ambassador. His connexion with that lady, with whom he lived publicly after the death of her husband, occasioned his separation from lady Nelson, on his return to England. In 1801, he was employed on the expedition to Copenhagen, under Sir Hyde Parker, in which he displayed his accustomed gallantry, and effected the destruction of the Danish ships and batteries. On his return home, he was created a viscount, and his honours were made hereditary in his family, even in the female line. When hostilities recommenced after the peace of Amiens, lord Nelson was appointed to command the fleet in the Mediterranean; and for nearly two years he was engaged in the blockade of Toulon. In spite of his vigilance, the French fleet got out of port, March 30, 1805, and, being joined by a Spanish squadron from Cadiz, sailed to the West Indies. The British admiral hastily pursued them, and they returned to Europe, and took shelter at Cadiz. On the 19th of October, the French, commanded by Villeneuve, and the Spaniards, by Gravina, ventured again from Cadiz; and, on the 21st, they came up with the British squadron off cape Trafalgar. An engagement took place, in which the victory was obtained by the British, at the expense of the life of their commander, who was wounded in the back by a musket ball, and, shortly after, expired. His remains were carried to England; and, after lying in state at Greenwich, he was magnificently interred in St Paul's cathedral, where a monument was erected to his memory. Having left no issue by his wife, an earldom was bestowed on his brother, and a sum of money voted by parliament for the purchase of an estate, which is to descend, with the title, to his collateral relatives. His life has been written by Mr M'Arthur, doctor J. Stanier Clarke, and doctor Southey. For an account of the battle of Trafalgar, see *Navy*.

NELSON, Robert; an English gentleman of fortune, which he employed in works of benevolence and charity, and, from this circumstance, as well as from the devotional works of which he was the author, is generally distinguished by the epithet of the *pious*. He was the son of a London merchant engaged in the Levant trade, and was born in London, 1656. Having gone through the customary course of study, he proceeded to make a continental tour, in company with his friend Edmund Halley. On the accession of William, he remained a nonjuror, associating and communicating principally with the recusant clergy. These opinions did not, however, interrupt his intimacy with archbishop Tillotson, whom he assisted in every work which had the good of mankind for its object, till the death of the worthy prelate, who expired in his arms, in 1694. In 1709, the arguments of some of his clerical friends had produced such a degree of conviction upon his mind, that he became a member of the established church, and continued in that communion till his death, which took place at Kensington, January 16, 1715. There are few writers on devotional subjects whose works have been so popular as Mr Nelson's. His treatise entitled a Companion to the Festivals and Fasts, especially, has gone through a great number of editions. Among his other works are the Whole Duty of a Christian; the Duty of frequenting the Christian Sacrifice (8vo); an Address on the Means of Doing Good; a Letter on the Trinity; the Practice of True Devotion (12mo); Transubstantiation contrary to Scripture (4to); a Letter on Church Government; a life of his old tutor, bishop Bull, &c.

NELSON'S RIVER, in the British possessions in North America, flows from lake Winnipeg into Hudson's bay; lon. 92° 466′ W.; lat. 57° 2′ N. A part of the river is called the *Saskashawan*. Its whole length is about 1450 miles.

NEMÆAN GAMES, so called from the small town of Argolis, where they were celebrated (Nemæa, in the Peloponnesus), originated, according to tradition, in the funeral games which were established in honour of Opheltes (see *Hypsipyle*), who was killed in his youth by a dragon. The heroes who went to Thebes called him *Archemorus* (the beginning of sorrow). He was the son of Lycurgus and Eurydice. Funeral games at the graves of distinguished men or favourite individuals, were very common in ancient times. Those of Opheltes, according to tradition, had this peculiarity, that they were renewed every three years. Another account relates, that the Nemæan games were established by Hercules, in honour of Jupiter, after he had destroyed the Nemæan lion, whose den was about fifteen stadia from Nemæa. A third account combines these two reports, stating that these games originated in the funeral games of Archemorus, but were renewed by Hercules, in honour of Jupiter. The plain of Nemæa is now inhabited by a single shepherd. Three Doric columns of the temple of Jupiter stand in the centre, with ruins scattered around. The Nemæan games were less solemn than the Olympic and Pythian. Sometimes, though not very often, time was divided by Nemæads (in the same manner as it was commonly divided by Olympiads and Pythiads). The Chronicon of Eusebius gives the second year of the fifty-third Olympiad as the first of the Nemæads. The Nemæan games were partly gymnastic (corporeal), and partly musical (intellectual), and resembled, in their regulations, the famous Olympic games. (q. v.) The judges of the combats (*agonothetæ*) were chosen from Argos, Sicyon, and Corinth, and wore, in commemoration of the origin of the celebration, black mourning garments. They were distinguished for their impartiality. Originally, the reward of the victor was a wreath of olive-branch; afterwards, of green ivy. See *Pindar*.

NEMÆAN LION. See *Hercules*, and *Nemæan Games*.

NEM. CON.; the contraction of *nemine contradicente*, which signifies, "no one opposing," or "unanimously."

NEMESIS, in the Greek mythology; according to some, the daughter of Erebus and Night; according to others, of Night alone: other accounts make her the daughter of Δικη (Justice), or of Jupiter and Necessity, or of Ocean and Night. She is the goddess of retribution, the tamer of the passions, the avenger, the enemy of pride and haughtiness; and she watches over the observance of the honours due to the dead; on which account a yearly festival, in memory of the departed, was called, by the Greeks, *Nemesia*. Nemesis is represented under the figure of a majestic female, clothed in a tunic, with a *peplum* thrown over her, and a crown (which is sometimes surrounded by stags and a Victory) on her head. With the right hand she grasps a part of her garments over her breast, and thus forms the ell measure; in her left hand she holds a cup, or a bridle, &c. On coins, she appears drawn in a car by dragons, sometimes wearing a mural crown, and rarely winged. The great number of coins and gems on which she is found, proves her worship to have been extensive and popular. She is also called *Adrastea*, from *Adrastos*, who, according to tradition, erected the first temple to her in Adrastea, or in Cyzicus; and *Rhamnusia*, from a small village of Attica, two miles from Marathon, where stood a statue of her, made by Phidias, from the marble brought thither by the Persians, for the purpose of erecting a trophy of their expected victory. She is sometimes considered the same as Leda.

NEMOURS; a French town, in the department of Seine-et-Marne, three and a half leagues south of Fontainebleau. It has 4150 inhabitants. It originated with a castle called *Nemus*. Louis XIV. gave the duchy of Nemours to his brother Philip of Orleans; and the house of Orleans retained it until the revolution. The second son and fourth child of the present king of the French, Louis Charles Philip Rafael, bears the title of duke of Nemours, which was his title before his father ascended the throne. He was born October 25, 1814. February 3, 1831, he was elected, by the Belgic national congress, king of the Belgians; but his father declined the offered crown, in a formal audience, February 17, to avoid disturbing the peace of Europe. Lafitte was then prime minister.

NENNIUS, an ancient British historian, abbot of Bangor, is generally said to have flourished about the year 620, and to have taken refuge at Chester at the time of the massacre of the monks of that monastery. Bishop Nicolson, however, contends, that from his own book, it is evident that he did not exist before the ninth century. He composed several works, of which catalogues are given by Bale and Pitts; but the only one remaining is his *Historia Britonum*, or *Eulogium Britanniæ*, which is published in Gale's *Hist. Brit. Scrip.* (Oxon. 1691).

NEOCASTRO. See *Navarino*.

NEOLOGISM (from the Greek νεος, new, and λογος, a word); a new word or phrase, or new use of a word; in fact, every innovation in a language, after it has had a classical epoch. The difficulty of prescribing a just medium in regard to the introduction of new words and phrases, is easily seen, because as long as a language is spoken, it must change and develope itself; and the greatest power on earth would be unable to retain it unchanged. On the other hand, a language is exposed to the greatest corruption if it is left open to all the neologisms of careless writers. Great genius generally gives currency to a neologism. In the last century, the orthodox in Germany called their opponents *neologists*, and their doctrines *neology*.

NEOPHYTE (from νεος, new, and φυτον, plant); in the Eleusinian and other mysteries, a person newly initiated; among the early Christians, a new convert from paganism; in the monasteries, a novice.

NEORAMA; an invention of Allaux, a Frenchman, for representing the interior of a large building, in which the spectator appears to be placed. Every thing is exhibited to the life by means of groups and shading. The first neorama was exhibited at Paris, in 1827, and represented the interior of St Peter's church in Rome, with the doors open, and a distant prospect. See *Panorama*.

NEPAUL; a mountainous country in the northern part of Hindostan, lying between lat. 26° 20′ and 30° 20′ N., and lon. 80 and 88° E., having Thibet, from which the Himala mountains separate it, on the north, and the British province of Bengal and Oude on the south; square miles, about 53,000; population, 3,500,000. It first became well known by the war between the British and the rajah in 1815. General Ochterlony advanced with such rapidity, that, February 28, he appeared before Muckwampore, the principal fortress of the Nepaulese. The rajah attempted, on the 29th, to recover the heights, which had been previously lost, but was driven back; and on the next day the British took fort Hurlapore, the bulwark of Muckwampore, by storm. By this rapid advance, general Ochterlony terminated the campaign, the issue of which had appeared doubtful on account of the sickness prevailing among the British troops, and compelled the rajah, Mahara Sah Bicra ma Sah, to accede (May 4, 1816) to the terms of peace before assented to by his brother. By the articles, the chain of forts on the southern frontier, together with several districts, was ceded to the East India company, and the passage through Nepaul to China was declared free to the company. The rajah also agreed not to receive any Europeans or Americans into his service. The rajah of Nepaul still possesses Goorca, the land of his ancestors, who first acquired Nepaul in 1768. The country is from 3000 to 6000 feet above the sea, and lies between two parallel ranges of mountains, one on the north, the other on the south; and it can be entered only through mountain passes. Three or four days are employed in ascending the range on the southern frontier from Behar. On arriving at the highest pass, the valley of Nepaul is spread out before the eye of the traveller. The soil is fruitful and well watered, the air pure, the climate healthy, and in summer, when the sun is reflected from the high mountains, very hot. In winter there is little ice; the north wind never blows in these valleys. The seasons are the same as in Upper Hindostan, only the rains set in earlier. The productions are honey, rice, oil, cotton, ginger, iron, marble, &c. The inhabitants are chiefly Hindoos and Newars. The latter are probably of Mongolian and Chinese origin. Besides these two nations, there are other little known tribes. The inhabitants are distinguished for the simplicity of their character and manners; the Newars are mostly artisans. The religion of the Nepaulese differs little from that of the Hindoos in Bengal. The custom for widows to burn themselves on the corpses of their husbands, prevails among them. The Hindoo languages are the Nepaulese, and the Nogari, which is said to be older than the Sanscrit. Cotton manufactures, and the working of iron and copper, are the principal employments. The people make paper from the bark of trees and plants, and distil brandy from rice and wine. The government is despotic, but more moderate than in other countries of Asia. The regular army consists of about 12,000 men, part of whom are armed with muskets. The capital is Catmandoo, with 20,000 inhabitants. See Hamilton's *Account of the Kingdom of Nepaul* (Edinburgh, 1819.)

NEPENTHE; a drink which was fabled, by the poets, to banish the remembrance of grief, and to cheer the soul. The invention was attributed to the Egyptians. According to Homer (*Od.* iv. 220), Helen learned the art of preparing it from the queen of Egypt.

NEPENTHES, or PITCHER PLANT; a singular and celebrated genus of plants, containing three known species, which inhabit Madagascar, the East Indies, and the neighbouring parts of the continent of Asia. The flowers are diœcious; the stem is cylindrical and simple; the leaves are alternate, entire, and sheathing at base; they are strongly nerved, and the median nerve, which is larger than the rest, is prolonged beyond the leaf in the manner of a tendril, and terminates in a cylindrical urn. This urn is three or four inches in length by nearly one in diameter, and its orifice is covered with an orbicular lid, which opens and closes at certain periods. It is usually filled with sweet and limpid water, at which time the lid is closed. In the course of the day, the lid opens, when more than half the water is evaporated; but this loss is made up during the night, and in the morning it is again found full, with the lid closed. The culture of these plants in green-houses is very difficult.

NEPHELE. See *Athamas.*

NEPHRITE, or JADE, a mineral never observed except in the massive state, and possessed of an impalpable composition, or compact texture. Its fracture is coarse, splintery, and, in some varieties, slaty; colour green, particularly leek-green, passing into gray and white, rarely with a tinge of blue or red; translucent; hardness approaching that of quartz; specific gravity, 2·932; fracture effected with great difficulty; alone before the blow-pipe, infusible, but becomes white. It consists, according to Kastner, of silex, 50·50, magnesia, 31, alumina, 10, oxide of iron, 5·50, oxide of chrome, 0·05, and water, 2·75. Other varieties of the jade are softer, and differ considerably in their chemical composition. The apple-green variety, tinged with blue, from Smithfield, Rhode Island, consists, according to Bowen, of silex, 44·68, magnesia, 34·631, water, 13·41, lime, 4·25, and oxide of iron, 1·747. Jade has been brought from China and Egypt. In America, it has been found on the banks of the Amazon. In New Zealand and other islands of the Pacific, it is often made into hatchets, and has hence been called *axe-stone.* In Rhode Island, it occurs imbedded in white limestone, in irregular veins and nodular masses. The pieces from this place, when polished, have considerable beauty.

NEPHTHYS; an Egyptian deity, sister of Osiris and Isis, wife of Typhon, and mother of Anubis by Osiris. According to Diodorus, she was the daughter of Ζευς (Jupiter) and ʽΗϱη (Juno). She was also called by the Greek writers Τελευτη (End), Αφϱοδιτη and Νιϰη (Victory.) Some consider her as the symbol of the Egyptian coast on the Mediterranean; others as the personification of the five intercalary days of the Egyptian year, in which point of view they are called her children by Mercury, the Sun, and Saturn. Plutarch names them *Osiris, Arueris, Typhon, Isis, Nephthys;* Diodorus calls them *Osiris, Isis, Typhon, Apollo,* and *Aphrodite* (Venus). See *Egyptian Mythology*, and of article *Hieroglyphics.*

NEPISSING; a lake in Upper Canada, about thirty-five miles long and twenty broad. It is twenty-five miles north-east of lake Huron; lat. 46° 12′ N.

NEPOMUK, John of (*Johannes Nepomucenus*); the patron saint of Bohemia. His true name was John Welflin, and he was born in 1320, at Pomuk, a small town in Bohemia. He studied in Prague, and became a preacher there. From humility he refused a bishopric. At a later period, he was made confessor of the queen, and when some courtiers made the king Wenceslaus suspicious of the fidelity of his wife, he refused to disclose the secrets of her confession, for which the king had him drowned, May 16, 1383 (according to others, March 21), in the Moldau. His day was at first May 6, because his body was then found; at present, it is May 10. He is much revered in Bohemia as a martyr, and his protection is invoked against slander, &c. Pope Innocent XIII. recognized him as a saint in 1721, and Benedict XIII. canonized him in 1729. The Jesuit Balbin has given his biography in his *Miscell. Hist. Boh.* It has been asserted of late that no such person as Nepomuk ever lived, but that there was a John of

Pomuk, who was archbishop of Prague in 1393. Yet the marble sepulchre of Nepomuk is shown in the cathedral at Prague. According to others, again, he was thrown into the river because he refused to renounce the authority of the archbishop, whose vicar he was, and who had excommunicated the chamberlain of the king, and preached against the vicious life of the king himself.

NEPOS. See *Cornelius Nepos*.

NEPOTISM; a word used in the languages of the European continent to signify, originally, the undue patronage bestowed by the popes upon the members of their family (*nepotes*) by appointing them to high offices in the church, or making them important grants. It was not uncommon for a person elected pope, to elevate his whole family, so that ever after the family belonged to the richest nobility in Rome. The term has been used also in a more general sense, to denote any patronage bestowed in consideration of family relationship, and not of merit.

NEPTUNE appears to have been originally known to the Romans merely as the god of horses, and as such to have been confounded with the ancient Italian god Consus. When the Roman state became a naval power, and the Greek mythology was introduced into Rome, attributes of the Grecian Poseidon, or Poseidaon, were transferred to the Roman Neptune, who therefore came to be considered the same god under different names. Neptune was the son of Saturn and Rhea or Ops, and brother of Jupiter (q. v.) and Pluto. Different accounts are given of the manner in which his mother saved him from the fate to which he was doomed by his father. (See *Saturn*.) According to some, he was thrown up again after having been swallowed by his father; according to others, Rhea gave her husband a foal instead of the infant, and the latter was secretly educated in Bœotia. After the successful rebellion of his brother Jupiter, Neptune received the dominion of the sea (*Pontos* or the inland sea, and not the ocean) as his share of the spoils. It is not easy to determine the true meaning of the mythus which describes him as having produced the horse in a contest with Minerva (q. v.) for the possession of Attica. It may imply that the use of the horse was first introduced into Greece at the same time with the worship of the Phœnician god Poseidon, by Phœnician pirates, or it may be connected with some symbolical idea. He raises, calms, and shakes the sea, and even makes the earth, with its mountains and woods, tremble. He was particularly worshipped in islands and on the sea-coast. The Isthmian games (q. v.) were celebrated in honour of him. Beside dolphins and other marine animals, the horse, and sometimes the owl, were sacred to him. In the earliest monuments of art, he is represented naked: in his hand he holds the trident, which the Mediterranean people early used as a harpoon, and as a mark of possession on any coast. He rides over the surface of the sea in a chariot drawn by two horses, accompanied by Nereids and sea-monsters. By his wife Amphitrite, he had two children, Triton and Rhode. The traditions concerning his other children, by various mothers, are by some explained as symbolical of the carrying off of women by pirates. Strength, courage, heroic deeds at sea, also obtained for men the appellation of *sons of Neptune*. The epithets applied to Neptune by the poets, refer chiefly to the sea, to navigation, to the creation of the horse, and also to his power of shaking the earth. Having taken part in the unsuccessful attempt of the gods to rise against Jupiter, he was condemned, together with Apollo, to serve Laomedon, king of Troy. Neptune built the walls of the city for Laomedon, but, being refused the pay promised him, caused an inundation, and sent a terrible sea-monster to infest the country. In the war of Troy, he was on the side of the Greeks, and in the battle of the gods, he encountered Apollo.

NEPTUNIANS, or NEPTUNISTS, are those who maintain the opinion, that the form of the earth and the revolutions which it has undergone have been produced entirely by the action of water. See *Geology*, and *Vulcanists*.

NEREIDS; sea nymphs, daughters of Nereus. They were fifty in number, and they had, like their father, the gift of prophecy and the power of assuming different shapes.

NEREUS; an interior divinity of the sea, sometimes also the sea itself, when it is calm. He was the oldest son of Pontus (the Sea) and Terra (the Earth). The poets represented him as a faithful, benevolent old man, the friend of justice and moderation, and the enemy of oppression. He possessed the gift of divination in a greater degree than all the gods of the three elements,—air, earth, and water,—and like other gods of the sea, could convert himself into all shapes. By Doris, the daughter of Oceanus, his spouse, and other goddesses, he was the father of the Nereids. His chief place of residence was the Ægean sea. When Paris sailed through this sea with Helen, whom he was carrying off, Nereus, according to the beautiful ode of Horace, warned him of the destruction of Troy. In the ancient works of art, and also by the ancient poets, he is represented as a malicious old man, with a wreath of sedge, sitting upon the waves, with a sceptre in his hand.

NERI. See *Guelfs*.

NERI, ANTHONY, deserves to be mentioned as one of the first chemists, at a time when the natural sciences were called *occult*. He was born in Florence about the middle of the sixteenth century. Though he had received holy orders, he always refused any benefice, in order to live solely for his science. He travelled through most countries of Europe, and wherever he was unable to study chemistry with distinguished men in any other way, he worked with them as an assistant in their laboratories. But his active life came prematurely to a close. There is only one treatise by him extant, on glass—*L'Arte Vetraria distinta in libri sette; ne' quali si scoprono maravigliosi effetti e s'insegnano segreti bellissimi del vetro nel fuoco, ed altre cose curiose* (Florence, Giunti, 1612, 4to), a work which has been translated into German, French, Latin, English. The best translation is said to be that by Holbach, in French, with the notes of the German and English translations, and many additional ones. Though chemistry has made immense progress since the time of Neri, his work, nevertheless, deserves to be read. The colouring of glass, it is well known, was a great subject of attention at a certain period, and attained a perfection which, having lost, it has not since reached.

NERI, ST PHILIP, the founder of the congregation of the Oratory in Italy, was born in Florence in 1515, of a noble family. From early youth he distinguished himself by piety and application to study. A rich uncle, a merchant, intended to make him his sole heir, but Neri left him secretly, and went to Rome in 1533, where he became instructer in the house of a gentleman of Florence. At the age of twenty-three, he sold his books, and gave the price to the poor. He now devoted himself entirely to the sick and pilgrims. In 1548, he established the fraternity of the Holy Trinity, for the purpose of aiding strangers who came to Rome for devotional purposes, and soon after he founded the *hospice* for the reception of pilgrims, which has become one of the finest in Rome.* He did not receive orders until the year 1551, having considered himself until then unworthy of them. Soon after, he entered the community of St Jerome, and instructed children, and finally also young ecclesiastics, who were called *oratorians*,* because they placed themselves before the church to call the people to prayer. In 1564, Neri collected these disciples into a community, and gave them regular statutes, but imposed no vow, wishing that they should always remain united by the bonds of charity only. Gregory XIII. approved of this congregation in 1575, and gave them the church *Sta. Maria di Vallicella*. The congregation soon spread over Italy. Baronius, one of his most distinguished disciples, assisted him in his last sickness. He died May 26, 1595. His letters were published at Padua in 1751. He wrote several other works; also poems, to be found in vol. i. of *Rimi Oneste*. A number of the poems of his youth he ordered to be burned shortly before his death. His life was written by Ant. Gallonio, his disciple, and the eye-witness, as he says, of most of the extraordinary deeds he describes. His life is also to be found in vol. v. of the *Acta Sanctorum*. (q. v.) Baronius succeeded him as general of the society in 1593.

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* At the time of the jubilee in 1600, this establishment supported, during three days, upwards of 440,500 men and 25,000 women.

NERLI, Philip, a Florentine historian, was born in 1485, in Florence, of a patrician family, and early prepared himself, by various studies, for the duties to which his birth called him. Cosmo I. made him a senator. He died in 1556. He left in manuscript, *Commentarj de' fatti civili occorsi nella Citta di Firenze dall' Anno* 1215 *al* 1537, not printed until 1728, though the nephew of the author had presented it to Francis Medici II., requesting his opinion respecting the propriety of publishing it. Francis of Medici therefore seems to have preferred not to see it published. To appreciate a history, we must always know the character of the historian, particularly if he treats of times much agitated by party struggles, which affected him personally. Nerli, though not desirous of a monarchy, was, in his disposition, aristocratic. His ancestors had been consuls 300 years before him; women of his family are mentioned by Dante. His uncle had the first Homer printed. To himself, when young, Horace was dedicated, "because he allowed no day to pass without reading him." He formed himself in the gardens of the Rucellai, in the society of Macchiavelli, who dedicated a chapter to him. He says, in the preface of his work mentioned above, that his endeavour is to show why the citizens of the great republic have subjected it to one single house (the Medici). Some have reproached him as guilty of flattery; but Ranke, in his excellent work *Zur Kritik neuerer Geschichtschreiber* (Leipsic and Berlin, 1824), says, that he treats that branch of the Medici family, at least, which ruled to the death of Clement VII., without hatred indeed, but without partiality.

NERO, Lucius Domitius Ahenobarbus (after his adoption, called *Claudius Drusus*), the son of Caius Domitius Ahenobarbus and Agrippina, the daughter of Germanicus, was born at Antium, A. D. 37. When Agrippina afterwards married the emperor Claudius, he was adopted by him, and succeeded him in the government, A. D. 54. Augustus, the first Roman emperor of the family of the Cæsars, commenced his reign with cruelty, but ended with clemency. Nero, the last, began mildly, but ended cruelly. He was excellently educated. Burrhus instilled into his mind all the knowledge and principles necessary to the formation of a great general and statesman, while Seneca made him familiar with philosophy and elegant literature. The beginning of his reign even surpassed the expectations founded upon the union of his great talents with such an education. A sentence of death being presented to him for his signature, he expressed a wish that he had never learned to write. But the flattery and the seductions of his courtiers, particularly of his freedman Narcissus, soon brought to light a character which till this time had slumbered. At the age of seventeen years, Nero gave himself up to the greatest excesses of sensuality and cruelty. He first poisoned Britannicus, to whose prejudice he had ascended the throne by the assistance of Agrippina, and afterwards, fearing his mother's ambition, put her to death also. The ridiculous desire of being esteemed a great performer in music, ruled in his bosom superior to all other passions. He performed in public, and placed soldiers, as spies, to observe those who did not appear inclined to admire his voice or his execution. He wished also to be distinguished in the chariot race. He traversed all Greece with a retinue of artists, and, of course, won the first prizes in all the celebrated contests and games. Sensuality made him ingenious in gluttony and in the gratification of his natural propensities; extravagance made him covetous, and danger made him cruel. The most distinguished victims to his cruelty, besides Britannicus and Agrippina, were his instructers Burrhus and Seneca, the poet Lucan, and his wives Octavia (daughter of Claudius and Messalina, whom he divorced on pretext of barrenness, and then banished to the island of Pandaleria, where he soon after caused her to kill herself by opening her veins), and Poppæa Sabina. "My predecessors," said he, "did not know the rights of monarchy. People may hate me, if they only fear me." For the gratification of an insane caprice, he set fire to Rome, merely, as it is reported, that he might have a real representation of the conflagration of Troy. The most beautiful monuments of art and of history were burned to the ground in this fire, which lasted nine days. He transferred the guilt of this action to the Christians, and caused them to be cruelly persecuted for it throughout the empire. As his passion for building was very strong, he caused that part of the city which was burned to be rebuilt in a manner more splendid and magnificent than before. The most remarkable of his buildings was the palace which he erected for himself in Rome, and which was known under the name of the *golden house*. His extravagance in other things—clothes, hunting, furniture, &c.—was as boundless as his munificence to the people of Rome, whom he enriched by great largesses (*largitiones*, common in the republic only under certain circumstances), while the provinces were oppressed by the weight of taxes. Several conspiracies were formed against him in Rome, which ended in the destruction of the conspirators themselves. At last, the revolt of Galba, his governor in Spain, whose cause the senate also espoused, succeeded. The tyrant anticipated the punishment which awaited him, by committing suicide, A. D. 68. Although the manifestations of joy were great at his death, yet persons were not wanting who still admired, deified, and lamented him. They strewed his grave with flowers, and placed his statue near the rostrum. In short, his memory was so precious to a great part of the people, and the soldiers, whom he had endeared to him by liberality and indulgence, that many impostors succeeded, for a time, in passing themselves off for Nero. Nero was less inimical to ingenious raillery because possessed of much wit himself, notwithstanding he was the first Roman emperor who made use of speeches prepared by another. It is much to be lamented that that part of Tacitus which contains a particular description of the character and government of Nero, has not come down to us.

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* The followers of this saint are called, in Italy, also *Filippini*, Philippians, from their founder.

NERVA, the successor of Domitian, and one of the most virtuous of the Roman emperors. In early life, he held the consulship, and was a man of a cultivated mind, and not without poetical talent, but was advanced in age when he ascended the throne, A. D. 96. He, nevertheless, performed many beneficent acts, provided for the public tranquillity and the execution of justice, and relieved the poor. Notwithstanding this, there were many unfriendly to him, particularly the soldiers of the guard, and there was even a conspiracy formed against him. He died A. D. 98. Trajan was his successor.

NERVES. The nerves of the animal frame are composed of bundles of white parallel medullary threads. Every bundle is surrounded with a soft sheath full of blood-vessels, and whose finest branches terminate in the substance of the nerves. These nerves are spread through the whole animal frame, and variously connected with each other. Only the epidermis, the hair, and nails are destitute of them. They are of various size, according as they are composed of more or fewer bundles of medullary threads. In the course of the nerves there are a number of knots; these are called *ganglions;* they are commonly of an oblong shape and of a grayish colour, somewhat inclining to red, which is perhaps owing to their being extremely vascular. In particular parts of the body, the nerves come in contact with each other, and the bundles composing them are mutually interwoven to such a degree that they cannot be disjoined without violence. These communications are called *plexuses,* and are found particularly in the abdomen behind the stomach, and in the region of the pit of the stomach, near the liver, mesentery, heart, &c. The final terminations of the nerves are various, particularly those which run to the organs of sense. In the auricular organ, for instance, the nerves terminate in a soft mass like pap, surrounded with moisture; the optic nerve terminates in a medullary skin; the nerves of taste terminate in little *papillæ;* those of feeling in the points of the fingers, and the surface of the skin in general; those belonging to the muscles are lost in the texture of the same, so that their terminations cannot be accurately ascertained. All the nerves are embraced under the general head of the *nervous system.* This is most intimately connected with the brain and the spinal marrow, which may be regarded as a prolongation of it. The brain is the centre, from which or to which proceed all impressions communicated to the nerves. The substance of the nerves is the same medullary matter which constitutes the brain, resembling the white of an egg, and appearing, to the unassisted eye, as if composed of little balls. The central termination of all the nerves is in the brain and spinal marrow, where they branch out into the skin or the interior of the organs. The various isolated, and, in part, heterogeneous structures of which the body consists, which are mechanically joined by the cellular tissue, the membranes, and the ligaments, are united into one harmonious whole by means of the nerves. The vascular system connects them only so far as it furnishes the supply of blood required for their support and their operations; but it is properly the nervous system which imparts to all their life, governs their operations, and establishes their sympathy and mutual action. This is effected by means of that portion of the nervous system which is diffused through the abdomen, forming many nets and plexuses, and constituting what is called the *vegetative,* or *reproductive,* or *organic nervous system,* because the growth and support of the body are effected by it. Another part of the nervous system affords the means of consciousness and voluntary action. This is the *brain* or *cerebral system* (*see these two articles*), which excites the nerves that put in action the muscles of voluntary motion, and those which supply sensibility to the organs of sense, and convey to the brain the impressions thence received. The nerves which communicate with the organs of sense, run in pairs —the first pair (olfactory nerve) to the nose, where it is spread over the surface of the nostrils, and forms the power of smell; the second (optic nerve) to the eyes; this is round, thick, and penetrates from behind the ball or globe of the eye (through a round plate of the firm coat of the ball, containing many little apertures), and is spread out on the inner and concave surface of the globe into a thin coat called the *retina,* on which the images of external objects are formed; the eighth pair (auditory nerves) are spread over the interior of the ear, and are sensible to the vibrations of the air. From the numerous ramifications of the ninth pair come the nerves of the tongue, which give rise to the sense of taste. The general sense of feeling is situated particularly in the skin; and peculiarly in the points of the fingers. This sense is produced by a variety of nerves diffused over the skin, and those parts which are most sensitive are supplied with the greatest quantity of nerves, which form entire series of contiguous nervous *papillæ;* for instance, at the lips, the points of the fingers, &c. Thus the action of the nerves is reciprocal from without inwards, and from within outwards—the first, because the impressions on the organs of sense are communicated by the nerves to the brain, and there form perceptions and feelings; the second, because the voluntary motions are produced by communications from the brain to the nerves, while the reproductive part of the nervous system quietly supports the whole machine, and, in a sound state of the body, is recognised only by the operation of the appetites, and by a general feeling of ease throughout the system; but, in a diseased state, gives rise to general uneasiness and pain. The power of the nervous system has no fixed point, but is variable, even in the same subject. In sleep, the activity of the cerebral system is impaired, that of the reproductive system heightened; therefore, in quiet sleep, the operations of the senses and the voluntary motions cease, while the activity of the organs of respiration and circulation, of digestion, secretion, and nourishment continues. From what has been said, it appears that the whole action of the body depends upon the nervous system. See *Nervous Diseases.*

NERVOUS DISEASES (*neuroses*) are such as consist in disturbed affections of sense and motion, unattended by any chronic or acute inflammation, or hemorrhage, or by any disturbance of the circulation. Nervous pains are called *neuralgiæ; spasms* are involuntary contractions in organs which have muscular fibres, or which are merely susceptible of contraction; *convulsions* are involuntary and irregular contractions, alternating with relaxations, in one, or several, or all of the muscles, simultaneously or successively; *tetanus* is a permanent contraction of a certain class of muscles, ordinarily followed by death; *contraction* is a retraction of the flexor muscles of one member or of two parallel members; *paralysis* is the diminution or loss of the sensibility of an organ of sense, or the contractility of an organ of motion. The pains, spasms, paralysis, take different names, according to the parts affected. The most remarkable of all the *neuroses* is *apoplexy* (q. v.), which is characterized by the suspension or successive loss of sense and understanding, as well as of motion. The affections of the mind, known under the names of *mental alienation, insanity, idiocy,* &c., are also *neuroses;* that is, disturbances in the action of the nervous system. It has been asserted that nervous diseases are rendered more common by the progress of civilization; and, in fact, the nerves become more irritable, and therefore more liable to be diseased with the progress of intelligence. But the refinements of the moderns in their food and drinks, the use of fermented liquors, wine, coffee and tea, are the most frequent causes of nervous maladies. The early and excessive use of these liquids provokes the nerves, and diseases the stomach, and gives rise to cerebral fevers in children, to the vapours or hysterics (q. v.) in women, to hypochondria (see *hypochondriasis*), apoplexy and paralysis in men. It is not always easy to distinguish the symptoms of *neurosis* from those of inflammation; but, as the treatment in the two cases must be entirely different, it is of the greatest importance to use every caution in this respect. Particular medicines, which were considered as specific remedies in nervous diseases, were formerly in use; but experience has proved, that warm bathing, soothing drinks, vegetable diet, exercise, recreation, sometimes bleeding, at others rubefacients, opium in a few cases, when the pain is great, and Peruvian bark, are the best antagonists of *neurosis.* The treatment of nervous diseases, however, has often embarrassed the scientific practitioner, as they often resist the most skilful and sagacious applications. See the articles *Nerves*, *Mental Derangement*, &c.

NESS; a termination common in Scandinavian geographical names, and signifying *promontory.*

NEST; the place or bed formed or used by a bird for incubation, or the mansion of her young until they are able to fly. The word is also used for the bed in which certain insects deposit their eggs. The construction and situations of the nests of birds are as remarkable as the variety of materials employed by them. Some birds build their nests with what, in the case of rational beings, would be called great ingenuity; others with the greatest negligence. They seem to be governed in the process merely by instinct. In fact, naturalists place this class of animals below the *mammalia.* Thus birds of cooler climates, that build early in the spring, require warmth and shelter for their young, and the blackbird and thrush line their nests with a plaster of clay, perfectly excluding the keen icy gales of the season; yet, should accident destroy this first abode, they will construct another, even when the summer is far advanced, upon the model of the first, and with the same precautions against severe weather, when all necessity for such provision has ceased, and the usual temperature of the season rather requires coolness and a free circulation of air. The house-sparrow will commonly build four or five times in the year, and, without the least consideration of site or season, collect a great mass of straw and hay, and gather many feathers to line the nest. The wood-pigeon and jay, which build on the tall underwood in the open air, will construct their nests so slightly, and with such a scanty provision of materials, that they seem scarcely adequate to support their broods; and the rook's nest is, at times, torn from its airy site, or its eggs are shaken from it by the gales of spring. The house-martin builds its earthy shed under the roof of the house, &c., and usually brings out its young in July and August; but one rainy day at this period, attended with wind, will often moisten the earth that composes the nest; the cement fails, and all the unfledged young ones are dashed upon the ground. The variety of spots chosen by birds according to their species is endless.

NESTOR was the most distinguished of the Grecian heroes at Troy for wisdom, the consequence of his great age (hence the phrase *a Nestor*); he was also particularly celebrated for his mild and persuasive eloquence. These are the qualities Homer has attributed to him in the Iliad. Nestor was the son of Neleus and Chloris. He was educated at Gerania, and succeeded his father as prince of Pylos. In his youth and manhood, he distinguished himself by many bold exploits, but also early acquired the reputation of a prudent counsellor and persuasive orator. He signalized himself among the Lapithæ, whom he assisted in their war with the Centaurs. After Lynceus and Idas, the sons of Aphareus, were killed by the Dioscuri, he also became king of Messenia. Notwithstanding he had lived through two generations, when the expedition to Troy was undertaken, he, nevertheless, took part in it, and conducted the forces under his command in twenty, or, according to some accounts, in ninety vessels to Troy. Whether we reckon a generation at a hundred years, as the ancients did, or at thirty years, as is usual with us, in either case Nestor was too old to take a personal share in the combats before Troy. The part which is attributed to him in the Iliad, is that of an experienced counsellor. He endeavoured to produce a reconciliation between Agamemnon and Achilles, and encouraged, advised, instructed, and blamed the Grecian heroes. Without his interference, the siege of Troy would more than once have been abandoned. After the capture of Troy, he returned to Greece. According to the Odyssey, Telemachus here visited him to obtain information concerning Ulysses. Homer states Eurydice, the oldest daughter of Clymene, to have been his wife; others, Anaxibia, the daughter of Craticus. He had several sons and daughters, but they are not distinguished in history. After Nestor had outlived three generations, he died quietly at Pylos, where, even to a late period, the inhabitants have pretended to distinguish his dwelling and his grave.

NESTOR, a Russian historian, born about 1056, was a monk in the Petscherian or cavern monastery in Kiev, and died after 1116. Besides biographies of abbots and other pious members of his monastery, the fragments of which were collected by another hand, he wrote a chronicle in his vernacular tongue, which is an important contribution to the history of the North, having evidently imitated and profited by the Byzantine historians with regard to the most ancient history. The other sources from which he obtained information are unknown. He wrote much as a contemporary, or from the traditions of an old monk of the monastery, Jan. This work is modelled according to the spirit of his age.* Pious reflections and scriptural language are frequently interwoven with the narration, and the persons are usually introduced speaking. But the original text of his chronicle is lost, and by the interpolations of those who have continued the history (bishop Sylvester of Kiev, and many others) to the year 1203, it is altered to an incredible degree, so that no correct decision can be passed upon his historical merits before strict inquiries have been made to determine how much of the historical information now extant is derived from the ancient Nestor. It has never yet been determined with certainty to what year his researches extended. Schlozer has rendered great service to this father of Russian history, by the publication of his unfortunately not completed work, Nestor's Russian Annals (from 862 to 1110), compared with the original Sclavonic text, and with the errors and interpolations expurgated as far as possible, explained and translated (into German only to the year 980, Gottingen, 1802—9, 5 vols.), besides which may be mentioned, as an abridgment and improvement, Jos. Muller's Ancient Russian History, from Nestor, with reference to Schlozer's Russian Annals (*Russische Annalen*), which are here corrected, completed, and enlarged (Berlin, 1812). A part of Nestor's chronicle from the Puschkinian manuscript was printed for the Russian historical and antiquarian society (Moscow, 1814, Timkowsky's edition).

NESTORIUS, and NESTORIANS. See *Syrian Christians*, and *Christians of St Thomas.*

NESTS, Edible. See *Birds' Nests*.

NET (Italian, *netto*, pure); that which remains of a weight, quantity, &c., after making certain deductions. Thus, in mercantile language, the *net weight* is the weight of any article after deducting tare and tret: *net profits, income*, &c., is the absolute profit or income, after deducting expenses, interest, &c. It is opposed to *gross* (*brutto*).

NETHERLANDS, Kingdom of the.—*History of the Netherlands.*—I. *Till* 1548, *or till the Union under the House of Austria.*—The Netherlands comprise the Lowlands, or north-west declivity of the great basin formed by the forest of Ardennes, the Vosges, the Hunsdück, the Siebengebirge, the Spessart, Odenwald, and Hartz, in the valley of which the Rhine flows down through the Netherlands. The southern portion of these Low Countries belonged, in Cæsar's time, to Gaul (*Gallia Belgica*). That great general declared the Belgians the most warlike of the Gallic tribes. The northern portion, situated between the Meuse, the Ural, and the Rhine, was called the *Island of the Batavians;* and, with Friesland, formed part of Germany. The part of the Netherlands north of the Rhine, was inhabited by the Frisians, who were, as well as the Batavians, a German nation. We are made more particularly acquainted with both, from the struggle which they so honourably sustained, under the command of Civilis, against the Romans. At subsequent periods, we find them engaged in commerce and piracy, and they were finally overpowered by the Romans. In the fifth century the Batavians, and in the sixth the Belgians, were reduced to submission by the Franks; but the Frisians were not subdued until the seventh century. (See *Belgians, Batavians*, and *Frisians.*) By the peace of Verdun, in 843 (see *France*), Batavia and Friesland were annexed to the new kingdom of Germany, and administered by governors who eventually became independent. In the eleventh century, the country was divided into duchies, counties, and imperial cities: Brabant or Lower Lorraine, and afterwards Luxemburg, Limburg, and Guelders, were governed by dukes; Flanders, Holland, Zeeland, Hainault, Artois, Namur, and Zütphen, by counts; Friesland Proper remained a free lordship; Utrecht became a bishopric: the secular authority of the bishop extended over Groningen and Overyssel. Of all these rulers, the counts of Flanders were the most powerful; and, after their possessions had passed, in 1383, to the more powerful house of Burgundy, the latter, partly by marriages, partly by force or cession, obtained possession of the largest part of the Low Countries. The last duke of Burgundy, Charles the Bold (q. v.), fell, in 1477, in battle with the brave Swiss; his daughter Mary, by her marriage with the emperor Maximilian, brought the Netherlands to Austria, and Charles V., grandson of Maximilian, born in the Netherlands, united (1548) the seventeen provinces with Spain, by the pragmatic sanction, as for ever inseparable from it, according to the rule of primogeniture. From 1512, they formed, under the name of the Circle of Burgundy, an appendage to the German empire. East Friesland continued, under its own princes, attached to the circle of Westphalia.—II. *Till* 1810, *or till the Union with the French Empire.*—Under the reign of Charles V., the Protestant religion, though severely opposed, spread in the Belgic and Batavian provinces. The number of persons executed, during his reign, in these countries, for heresy, is computed at 100,000. The rulers of the Netherlands, even Charles V., had always respected their privileges and ancient liberties, by which means the country had been rendered prosperous, and had been a source of wealth to the monarchs. Charles's son and successor, the cold tyrant Philip II., abandoned the maxims of his prudent predecessor. Born in Spain, he treated the distant Netherlands with the greatest severity. His governors, especially the cruel Granvella, assailed the established rights of the provinces; and, by means of the inquisition, all freedom of religious opinion was to be exterminated. These measures excited the wrath of a free people; great numbers of industrious artisans, particularly workers in wool, fled to other countries, especially to England and Saxony; the nobility conspired in defence of their rights (see *Gueux*); and the Protestants publicly celebrated their divine worship with all the defiance of enthusiasm. When Granvella was recalled, in 1564, it was too late to extinguish the conflagration he had kindled, except by force. Philip sent the bloody Alva (q. v.), under the axe of whose executioner fell the heads of the noblest of the nation—Egmont and Hoorn. The prudent prince of Orange had disappeared only to reappear in arms, while Alva sacrificed thousands to his fanatical rage. Even the moderation of his wise successor Zuniga, could not calm the excited spirits; and the politic prince of Orange, though often defeated by don John of Austria and Alexander of Parma, finally came off victorious in the unequal conflict for freedom and religion. The struggle would have been sooner terminated, had not the different situation of the Dutch provinces—the mutual jealousies of the nobles, each aiming at his own aggrandizement, and the unhappy religious suspicions prevailing between the Catholics and Protestants—done much to retard the victory. Almost all the other provinces joined, indeed, at Ghent, in 1576, the open rebellion of Holland and Zeeland; but the abilities of the Spanish governor, the prince of Parma (see *Farnese*), were successfully employed in reducing the most southern, or, as they were called, the *Walloon* provinces, to the Spanish power; and, soon after, in subjugating Brabant and Flanders, by force of arms, in effecting which he was much assisted by the flight of the most intelligent and influential citizens, who repaired mostly to Holland. In 1579, the five northern provinces,—Holland, Zeeland, Utrecht, Guelders, and Friesland,—concluded the celebrated union of Utrecht, by which they declared themselves independent of Spain. They were joined, in 1580, by Overyssel, and, in 1594, by Groningen. Thus, after the united provinces had renounced their allegiance (July 26, 1581) to the king of Spain, "as a tyrant," arose the republic of the United Netherlands, afterwards commonly called *Holland*, from the province of that name, which was superior to the others in extent, population, riches, and influence. After the assassination of William (q. v.) of Orange, July 10, 1584, Maurice (q. v.) became stadtholder (governor), and followed the steps of his predecessor. His victories at Nienport and in Brabant, the bold and victorious exploits of the Dutch admirals against the navy of Philip II. (q. v.), the wars of France and England against Spain, and the apathy of Philip II., caused, in 1609, the peace of Antwerp, of twelve years' duration. But Holland had yet to go through the thirty years' war (q. v.), before its independence, now recognised by all the powers except Spain, was fully secured by the peace of Westphalia. While religious disputes distracted the other European states, Holland offered a safe asylum to the persecuted. All religions were tolerated. The continually increasing population found it necessary to seek employment beyond the ocean. Compelled by necessity to make war against the Spanish fleets, the republicans soon became excellent sailors, and enterprising, indefatigable merchants, who visited every sea, and to whom no profit was too distant, no obstacle too discouraging. The commerce of Cadiz, Antwerp, and Lisbon fell into their hands; and in this way the United Netherlands were, in the middle of the seventeenth century, the first commercial state and the first maritime power in the world; for, with about 100 vessels of war, they bade defiance to every rival, while England and France rejoiced in the humiliation of the dreaded monarchy of Spain. The East India company (q. v.), established in 1602, with a capital of only 6,459,840 guilders, conquered islands and kingdoms in Asia. (See *India, Dutch;* and *East India Companies.*) With about 200 ships, they carried on a trade with China, and even with Japan. They alone supplied Europe with the productions of the Spice islands. The gold, the pearls, the precious jewels of the East, all passed through their hands. The West India company was not so successful, on account of the jealousy of England and France. Holland, nevertheless, for a long time maintained the dominion of the sea; Tromp and Ruyter were victorious, and Louis XIV., who had laid a deep plan for humbling the daring republic, was finally exhausted, and obliged to sue for peace. But these conflicts with England and France, and the impolitic participation in the Spanish succession war, enfeebled Holland; while the republican jealousy of the ambition of the house of Orange kindled the flames of party rage and civil war, which prevented the adoption of a fixed and consistent course of policy. From the time of Maurice and Barneveldt, the two leading parties (the Orange and the patriotic, or the anti-Orange) had gradually assumed various shades of opinion, under leaders who pursued their own selfish views. By the same causes, religion was brought into play: the strict Calvinists were, in general, Orangists; those of other opinions, patriotic; thence the frequent political convulsions, caused sometimes by the encroachments of some stadtholders, sometimes by popular commotions, and which were always preceded by an arbitrary administration of government, or unsuccessful wars. This was shown in 1618, 1672, and 1702, and, more fully, in 1747, in which year the house of Orange triumphed over the republican party. William IV. received the dignity of stadtholder in all the seven provinces, hereditary in his male and female descendants. The Spanish or Catholic Netherlands had, meanwhile, become the fatal apple of discord, for which Austria and France contended for two centuries. By the peace of the Pyrenees, in 1659, and of Aix-la-Chapelle, in 1668, Spain was finally compelled to cede to France all Artois, some places in Flanders, Hainault, Namur, and Luxemburg; and these countries were subsequently called the French Netherlands. By the peace of Utrecht, which put an end to the Spanish succession war in 1713, the Spanish Netherlands were restored to the house of Austria, which held them till the French revolution, though they rebelled against Joseph II., especially under Van der Noot. In 1782, that monarch violated the barrier-treaty of 1715, which gave the republic of the United Netherlands the right of keeping garrisons in some Belgic fortresses on the French frontier; he compelled the Dutch garrisons to evacuate them, and caused most of the fortresses to be demolished. This measure greatly facilitated the conquest of Belgium by the French (1792 and 1794), which was ceded to them, in 1797, by the peace of Campo-Formio. Meanwhile the internal commotions in the United Provinces were not suppressed. The anti-Orange or republican party, by no means annihilated by the rendering of the stadtholdership hereditary in the house of Orange, raised its head anew in 1786. The disputes in 1781, with Louis, duke of Brunswick, who had been for thirty years, field-marshal of the United Provinces, and had exercised, for a time, the guardianship of the hereditary stadtholder William V., were merely preludes to the furious conflict that now arose. The wife of the stadtholder, sister of king Frederic William of Prussia, arrested by violent patriots, besought the succour of her brother. A Prussian army of 25,000 men appeared to avenge the insult, and defend the rights of William V. The resistance of the patriots was badly conducted and unsuccessful. After the storming of Amstelveen, Amsterdam fell (September, 1787) into the power of the Prussians. The superiority of the stadtholder's party was decisive; the rights of the house of Orange were confirmed, with additions, and a close alliance was concluded between the republic, Great Britain, and Prussia. The anti-Orange party was, however, only intimidated, while its old hate was imbittered. When, therefore, the victorious banners of republicanized France waved (1794) on the frontiers of Holland, the malcontents rose. Pichegru, aided by the severity of the winter of 1795, and by the favour of the popular party towards the French, made an easy conquest of Holland. The hereditary stadtholder fled, with his family, to England, and the Batavian republic was formed May 16, 1795. The old provinces were merged into a sole republic; the legislative power, in imitation of the French, given to a representative assembly; and the executive, to a directory of five. The new republic was obliged to cede to France some southern districts, particularly Maestricht, Venloo, Limburg, and Dutch Flanders; to form a perpetual alliance with that state; pay a sum of 100,000,000 guilders; and allow French troops to occupy its territories. Six years after, it was found necessary to alter this constitution (Oct. 18, 1801). The republic was again divided into the old provinces; in addition to which the land of the generalty was formed into an eighth. The administration of the government was simplified; the legislative assembly diminished to thirty-five deputies; and the executive power was extended to a council of state of twelve men. Notwithstanding these alterations, the Batavian republic, incapable of effecting its ends with the feeble remains of its strength, saw its fleets overpowered by those of Britain; its colonies laid waste; its commerce limited to a coasting trade, and to the domestic consumption; and the bank of Amsterdam ruined. By the peace of Amiens, in 1802, it was deprived of one of its richest colonies—Ceylon. Scarcely were the hopes of better times awakened, when Holland was involved in the new wars of France with Great Britain. Surinam and the Cape fell into the power of the British. British vessels blockaded the coasts of Holland, and thus the last nerve of its prosperity seemed destroyed. For the third time, the Dutch constitution was changed (April 29, 1805). The state was divided into eight departments, and a legislative body of nineteen members, with a pensionary (Schimmelpennink), chosen for the term of five years, and who administered the executive power, was created. A council of state, consisting of from five to nine members, was assigned to the pensionary, and five ministers had the care of affairs. The pensionary received an indefinite sum, for the management of which he was not required to give any account. But in this stormy period, even Schimmelpennink's virtue was insufficient for the salvation of a country which, by the loss of its ancient independence, and of its abundant resources, was already brought to the verge of ruin. In this troubled situation, the only alternative seemed to be to incorporate Holland altogether with the French empire. This measure, long meditated, was accomplished in 1806. The brother of the emperor, Louis Napoleon, received possession of Holland as a sovereign kingdom, and, June 5, 1806, he was proclaimed king of Holland. By the treaty made with France, (May 24,) it was stipulated, that Louis Napoleon should be hereditary, constitutional king of Holland, and that the throne should be secured to his lawful male posterity, with a provision that the crowns of France and Holland should never be united. The king remained hereditary constable of France, and, with all his children, subject to the French imperial family statute. In Holland, he possessed, without limitation, the executive power, the right of appointing to civil and military offices, the right of pardoning, and the exclusive government of the colonies. A council of state was also constituted, of thirteen members, among whom were four ministers of state. The legislative body consisted of thirty members, and it was provided that this body should be increased in proportion to the extension of the territory of the state. But Holland was equally unfortunate as a kingdom. It was excluded from the commercial privileges of France, though it had to follow all the wars of Napoleon. The national debt was augmented to 1,200,000,000 guilders. The only means by which the merchant could obtain a support was the smuggling trade with England. Almost all the sources of former prosperity were obstructed; and, when Napoleon's decree of November 11, 1807, was promulgated from Milan, and the tariff of Trianon, with all its terrible consequences, went into operation, the trade of Holland was totally ruined. In 1807, East Friesland and Jever were annexed to it, but it was obliged to cede, in return, the territory situated between the French frontier and the Meuse, together with a part of Zeeland, and the fortresses Bergen-op-Zoom, Breda, Hertogenbosch (Bois-le-Duc), Gertruidenburg, Middleburg, and Flushing. The war against Austria, in 1809, gave rise to the descent of the English on Zeeland (Walcheren), which only accelerated Holland's ruin. The country, at the same time, experienced some great calamities. In January, 1809, the whole tract from Emmericht to Dortrecht and Rotterdam, upwards of 1000 square miles, was overflowed; more than 300 men lost their lives in the floods; and several thousand head of cattle, many houses and mills, even whole villages, were swept away. The exertions of the good but weak king, to alleviate the general distress, were of little avail, particularly after the landing of the English, as he lost the friendship of his brother. The misunderstanding increased, and the treaty of Paris, of March 16, 1810, delayed the last blow but for a few weeks. Louis, not to involve the country in his personal difficulties, or produce a war with France, the consequences of which could easily be foreseen, voluntarily and unexpectedly abdicated the crown, in favour of his eldest son, a minor, July 1, 1810, and withdrew into the Austrian territory, as a private individual. Napoleon did not, however, sanction his brother's measures. July 4, French troops occupied Amsterdam, and, by the imperial decree of July 10, 1810, Holland was incorporated with the French empire; Amsterdam declared the third city of the empire; and six senators, six deputies in the council of state, two judges in the court of cassation, and twenty-five deputies in the legislative body, were assigned to Holland. The army and navy, both officers and soldiers, were received into the imperial service; and the arch-treasurer of the empire, the duke of Piacenza (Le Brun), became the emperor's representative in Amsterdam, and governed the country till January 1, 1811, when the whole constitution was to be modelled on the French. The Dutch departments, which had already been formed in the time of the kingdom, now constituted two military divisions; the conscription was introduced; and half of the forces levied were destined for the army, half for the navy.—III. *Till* 1815, *or till the Union of the Netherlands, under the House of Orange.*—Thus all the seventeen provinces of the Netherlands were united under the dominion of France. But this state of things continued only till the end of 1813. Napoleon's defeat at Leipsic produced a change in the fate of Belgium and Holland; the armies of the allies advanced against France; a combined Prussian and Russian force, under general Bülow, was sent against the Netherlands, and was joined by a detachment from England, under general Graham. November 20, 1813, general Bülow issued a proclamation, calling upon the Dutch to join the allies against the French. On the 18th of this month, Gysbrecht Charles van Hogendorp, a moderate adherent of the old Orange party, had secretly assembled in his house some of the members of the old government, who, in 1788—95, had managed the helm of state, and endeavoured to persuade them to constitute themselves provisionally as the states-general; but they did not dare engage in the undertaking. Hogendorp next invited those who had held the reins of state in 1786 and 1787, and after 1795, and who, though formerly anti-Orange, would gladly have acceded to the old republican Orange system, had they not been rendered distrustful by their exclusion from the first meeting. After two unsuccessful attempts, the seventeen first confederates (among whom the most distinguished were the count Limburg-Styrum; the lords Van Perponcher, Fagel, and Changuion; the generals Sweerts, Van Landas, and De Jonge; professor Kemper and the advocate Fannius Scholten) appointed from their body Gysbrecht van Hogendorp and baron Van der Duyn van Maasdam, a man of liberal principles, as a provisory government, to preserve the revived republic, till the prince of Orange should arrive from England, whither Van Perponcher and Fagel were despatched (November 19) to invite him over. The duumvirate exerted themselves to the utmost to accomplish this design. They sent messengers to the headquarters of general Bülow, at Munster, and to Frankfort on the Maine, to the allied monarchs, who immediately resolved to aid the attempt of the Dutch. Kemper and Scholten were sent as commissioners to induce Amsterdam to declare itself publicly; but, owing to the proximity of the French headquarters, under general Molitor, at Utrecht, this could not be effected; but they received, nevertheless, the strongest assurances of attachment to the house of Orange. The hereditary stadtholder arrived at the Hague November 30, where, after spending a day, he proceeded, in December, to Amsterdam. The commissioners of the duumvirate (Kemper and F. Scholten) had, as it is thought, of their own motion, issued a proclamation, ending with the declaration, "The Netherlands are free, and William I. is the sovereign prince of this free country." The prince, however, accepted the nomination only on condition that his power should be restrained by a constitution, which (these were his words) "should guarantee the privileges and liberties of the people, and secure them from every encroachment." A board of fourteen members, among whom were the former duumvirate, was intrusted with the framing of this constitution, which, however, did not wholly answer the expectations of unprejudiced and intelligent patriots. More than a third of it was occupied with the rights and privileges of the reigning dynasty; the most important civil regulations, particularly those of the provincial estates, were left to be settled subsequently; and the principles of the judiciary and of the finances remained undetermined. This sketch was made public before voting on it; but all amendments to the constitution were prevented, by the rule forbidding all remarks and discussion in the convention, to which 600 notables, from all the departments of the former United Provinces, were summoned. Only 475 appeared. Among the 125 absent, there were distinguished men, who would neither have submitted to express their opinion merely by yeas or nays, nor would have deemed themselves justified in conferring the sovereignty, without express instructions, or without the loudly-declared assent of the whole nation. Of those present, many acquiesced conditionally, although their votes were reported as unconditional. The result was, that there were 26 votes only unconditionally opposed to the plan of the constitution, which was therefore adopted, by a majority of 449 votes. By a resolve of the congress of Vienna, the Belgic provinces were united with the United Netherlands, to form the kingdom of the Netherlands, and the prince William I. (q. v.) was recognised by all the powers as sovereign king of the Netherlands. As an indemnification for the cession of his territories of Nassau, in Germany, the duchy of Luxemburg was given to him, with the title of a grand-duchy, which still, however, belonged to the Germanic confederation; the king of the Netherlands, as grand-duke of Luxemburg, had a seat (the 11th) in the diet of the confederation, and three votes in the *plenum*. It was left in the power of the king to make such a disposition as to the succession of the grand-duchy, as he might deem proper. To these territories was also annexed the ancient bishopric of Liege.—IV. *Since* 1815.—In June, 1815, the king acceded to the Germanic confederation. The incorporation of so many provinces, inhabited by people who, although anciently of the same origin, differed in manners, customs, and religious opinions, naturally rendered a revision of the constitution necessary. Conformably with the 143d article, the 55 members of the states-general were eventually doubled, by the provincial estates, in order to deliberate on the needful alterations. A majority of two thirds was requisite for the adoption of any proposition, which was then to be submitted to the approval of the prince. These preliminaries having been gone through, a convention of the notables was assembled at Brussels, of whom a greater number, in proportion to the population, was from the southern provinces. One sixth of these, however, did not appear, so that the whole number present was 1323, of whom 527 voted for, and 796 against, the constitution. But it being found that not only some votes had been given conditionally, contrary to rule, but that 126 votes were given against the constitution merely from religious motives, these last, together with the 280 absent, were counted in favour of the constitution, for which a majority was thus obtained; and, August 24, it was declared to be adopted. October 11, a treaty on the subject of the Belgic national debt was concluded between the king of the Netherlands and Austria. By the second peace of Paris, November 20, 1815, France ceded to the kingdom of the Netherlands whatever it still retained of the former Austrian Netherlands, particularly a rich mineral district, situated in the centre of the Ardennes, between Hainault and Namur, the loss of which had been severely felt by the inhabitants of the Netherlandish province of Hainault, with the fortresses of Marienburg and Philippeville. The crown of the Netherlands also obtained the sovereignty of the small duchy of Bouillon (q. v.), between Luxemburg and Champagne. By the treaty with England, of October 29, 1814, in consideration of the relinquishment of all the claims of Holland to the Cape of Good Hope, and to the colonies of Demerary, Essequibo, and Berbice, all the other colonies that Holland possessed anterior to 1794, in Asia, Africa, and America, were restored to William I. May 17, 1816, a Netherlandish fleet, under the admiral Van der Capellen, joined the English under lord Exmouth, in the bay of Algiers, and compelled the dey of Algiers to recognise the European law of nations. On the 25th, a compact was concluded between the kings of Prussia and of the Netherlands respecting the cession of a tract of country to the latter. June 21, 1816, the king of the Netherlands acceded to the holy alliance. The want of a common feeling between the Belgic and Dutch subjects of the new monarchy was strongly displayed on several occasions. The great influence of the Belgic clergy (who were disaffected to a Protestant dynasty), even over the higher classes; the mutual dislike of the Belgians and the Dutch; the dissatisfaction of the latter with the long residence of the court in Brussels; and the division in the Dutch provinces, since the establishment of the monarchy, of the professed adherents of the reigning family into the old Orange party, or friends of a hereditary stadtholderate or republican system, and the new Orange party, or partisans of the monarchy (to which belonged the greater part of the nobility and army)—caused much discontent, which was, however, counterbalanced by the increasing confidence in the personal character and the conciliatory policy of the king. In the foreign relations of the kingdom, the government, for the most part, pursued the British system. The marriage of the crown prince with a Russian grand princess produced beneficial relations with that empire. With the bordering state of Prussia, commercial subjects produced some collisions; but between the two reigning families a close connexion has existed since the marriage of prince Frederic, in 1825, with Louisa, daughter of the king of Prussia. The political relations of France with its new neighbour were pacific. With Sweden and Denmark, as with Spain and Portugal, the relations were purely commercial. The commercial relations with the United States of North America had been established on principles of reciprocity. The Netherlands had recognised the new republics of South America, and, in 1826, sent a deputy to the congress of Panama. Though this incongruously compounded state had made some progress since 1818, under the influence of its constitution, yet the amalgamation of the Dutch and Belgians into one nation was not successful; both nations disdained to bear the common name of the state of the *Netherlands*. This reciprocal aversion of the northern and the southern people, stimulated by the events of late years, was several times exhibited, with great animosity, in the church, in the army, and even in the chambers of the states-general. But the spirit of dissension entered most deeply into the popular feeling, and was maintained in vigour for years, by some Catholic clergy, who inculcated opposition to the constitutional system in the pulpit and in the confessional; for the pope had allowed the Belgic priests to grant absolution to the Netherlandish officers of government only when they swore fidelity to the constitution merely in a civil sense; while the government allowed no restriction. The opposition of the Catholic clergy to the government, gave rise, at first, to such great dissatisfaction on the part of the people, that the government was obliged to organize a strict police in the southern provinces, which again produced new complaints. It was therefore abolished, April 1, 1818. The government was also forced to put a stop, in 1825, to the influx of the French missionaries into Belgium. On the other hand, the pope issued a bull of excommunication against the schismatics or against the Jansenist bishops and archbishops of Utrecht, Haarlem, and Deventer, who had taken the oath of allegiance to the king. The relations of the Netherlandish government to the Roman court appeared, however, to be finally established, after long negotiations, by the concordate signed at Rome, June 18, 1827, by the Netherlandish ambassador count de Celles and the plenipotentiaries of the holy see, which concordate was ratified at Brussels, July 25, 1827. By it, the concordate concluded by Pius VII. with Napoleon, July 15, 1801, became valid in the northern provinces of the kingdom, as it had previously been in the southern. Each diocese had its chapter and its seminary. The chapter of a vacant see was to propose candidates from the Netherlandish clergy; those to whom the king should object, were to be struck from the list; the chapter was then to choose from the approved list the bishop or archbishop, whom the pope was immediately to confirm, if he should find him properly chosen. But the execution of this concordate, which did not meet with the approbation of a great part of the nation, was attended with new difficulties; the government, though desirous of retaining the philosophical college founded at Louvain (q. v.), in 1825, as a useful institution for all theologians, was obliged to abolish it in 1830. To the five bishoprics (Mechlin—the metropolitan—Liege, Namur, Tournay, Ghent) three new ones (Bruges, Amsterdam, and Hertogenbosch) were added. Another cause irritated the Belgic people in particular—the prohibition of the French language. As the difference of language rendered the union of the southern and northern Netherlands into one nation difficult, the government, while it allowed the use of the French as well as the Dutch in the proceedings of the states-general, abolished, by the ordinance of July 11, 1818, the use of the French language in judicial proceedings, and by the public authorities, only allowing advocates to make use of it for a certain period. Another royal edict, of September 15, 1819, required that in Limburg, East and West Flanders, and in Antwerp, no other but the national language, the Flemish-Dutch, should be used in public business: this rule, indeed, it became subsequently necessary to soften; but, October 26, 1822, it was anew ordered, that the national language alone, the Dutch or Flemish, should be used in schools, as well as in all public transactions. January 1, 1823, this rule was introduced in all the courts of justice, even in Brussels. The French language, nevertheless, remained prevalent there in society, and it was found necessary, till the end of 1825, to allow the advocates who had never yet spoken before court in Dutch, to argue their causes in French. In the chambers, especially in the second, speakers were heard in three different languages, who, perhaps, in many cases, did not understand each other; the Belgic deputies speaking French, the ministers and the ministerial party, partly Dutch, partly Flemish. The suppression of the French language, therefore, made two opposite parties the secret friends of France—the Catholic Belgians, apprehensive for their church, because they believed that the object was to propagate the Protestant faith by means of the prohibition of French; and the Brabanters and Flemings, adhering to France from old predilection. Thus notwithstanding the prohibition of the French and German languages in public life, the bonds of national unity were by no means tightened. On the contrary, besides the diversity of language and religion, other causes separated the southern provinces from the northern. The administration of justice was to be regulated by a new civil code. This code was drawn up in the council of state, and for several years submitted to a strict examination in the sessions of the states-general. The settling of the national finances was the most difficult problem for legislation. The greatest obstacle lay in the uniform levying of taxes. Belgium, a manufacturing, agricultural country, wished to place the burdens on articles of export and import; while Holland, to spare its own commerce, wished to impose them on real estate. The budget, therefore, always employed a great part of the time of the states-general, who convened in October of each year, alternately at the Hague and at Brussels. The proceedings in the chambers were often exceedingly turbulent. The new finance law created such dissatisfaction among the people, especially what related to the meal tax, that in the grand duchy of Luxemburg, in January, 1823, disturbances arose, which it was found necessary to quell by force. After deducting the deferred debt, which bears no interest, the true debt amounted, in 1823, to 593,578,900 Dutch guilders, or over 237,000,000 dollars. To promote the unity of the administration, a ministerial council was organized, September 10, 1823, to examine all bills proposed for legislation. In 1819, the army was diminished to 40,000 men, a force apparently hardly sufficient to garrison forty-seven fortresses. A civil militia of 25,000 men was therefore introduced. In May, 1822, the government abolished in the army the punishment of flogging, and established for criminals disciplinarian battalions. The construction of the frontier fortresses, to which the military payments of France were appropriated, was diligently prosecuted, and the duke of Wellington several times visited the frontiers of Belgium to supervise these operations. In 1827, the second son of the king, prince Frederic, was minister of war. The government did a great deal for every branch of public education, especially for the public schools; it protected the diffusion of information, and was deterred by no expense. In vain did the government of the Roman church endeavour, in 1825, to withdraw the Catholic institutions for instruction in Belgium from the inspection of the state authorities. For supplying the deficiencies in the history of the Netherlands, a royal commission was appointed, which published unprinted manuscripts. July 3, 1826, the king also established a commission for the statistics of the kingdom. The state of agriculture may be learned from the Brussels monthly periodical, *Journal d'Agriculture, d'Economie Rurale et des Manufactures du Royaume des Pays-Bas* (since 1816). Several attempts were made to reconcile the conflicting interests of the southern Provinces, which contain upwards of 3,175,000 inhabitants excluding 225,000 in the grand-duchy of Luxemburg, and those of the northern provinces, which contain above 2,100,000 inhabitants. The royal ordinance of June 28, 1818, recommended the formation of agricultural societies in each province of the kingdom. We ought in particular to mention the reclaiming of the marshes, and the cultivation of wild tracts by the establishment of pauper colonies (see *Colonies, Pauper*), &c. The establishment of these colonies, at Fredericsoord, in the northern, and at Wortel (since 1822), in the southern provinces, is worthy of imitation. Formerly, 10,000,000 guilders were annually appropriated to the poor. This sum is not only mostly spared, but an important addition is made to the country. The number of poor, moreover, diminishes, who formerly constituted, in several provinces, one sixth of the population. In 1823, 682,000 persons were computed to stand in need of aid. A bank was established at Brussels, in 1823, with a capital of

50,000,000 guilders (about 20,000,000 dollars), and a general association for the promotion of national industry commenced its operations there. Navigation was advancing. In 1823, 1312 vessels entered the Meuse, and 1323 left it; 2159 vessels entered the port of Amsterdam. A very important thing for the commerce of the country was the completion, in 1825, of the canal from Amsterdam to the Helder. This canal, which is 124 feet wide, over twenty feet deep, about fifty miles long, and cost upwards of 12,000,000 guilders, is a national undertaking worthy of the best times of Dutch commerce. (For an account of it, see the end of the article *Amsterdam.*) In 1823, the king established premiums for the encouragement of naval architecture, and, since 1815, has endeavoured to join with most of the neighbouring states in establishing the principle of freedom of commerce. New sources of wealth have been opened to the commercial spirit of the Netherlands by the restoration of the colonial system. For this purpose, the government maintains, in its East Indian archipelago, a considerable navy, and on Java an army of 10,000 men. By means of this force it was able to quell, in 1818, the insurrection on Amboyna and the neighbouring islands (which had been, during the war, under the mild administration of the British, and detested the old yoke of the Dutch), as well as another insurrection in the tributary kingdom of Sheribon, on the western part of Java; they were, nevertheless, obliged to combat again, in 1827, the rebellious Javanese. Much bloodshed also attended the restoration of their dominion over the sultan of Palembang, on Sumatra, and the recovery of the rich tin island Banca. The income of the spice islands had, indeed, lessened, because, during the British administration, several new spice plantations had been formed on the islands situated near Celebes and the Moluccas; and, in 1821, the cholera morbus swept away multitudes of men in the Dutch East Indies; on Java alone, more than 150,000 died; but the India trade, nevertheless, revived so rapidly, that the subscription opened by the government, in 1824, for the erection of a Dutch society, instead of 8,000,000—the sum required—produced more than 73,000,000. This joint-stock company, founded by the king, March 29, 1824, was to last till 1850. Its object is the promotion of national trade, of navigation, of naval architecture, of agriculture, and of manufactures, by the extension of commercial relations, and by the opening of new ways of disposing of Dutch productions. In Batavia, it maintains a factory, and in China an agency. In general, it employs only Dutch vessels, under the Dutch flag, commanded by Dutch masters. It is intended to restore the old relations with China, and to promote the commerce with America and the Levant, as well as the fisheries in the Indian seas. The foreign affairs of the Netherlands relate mainly to the colonial interests and the slave-trade. By a treaty with Great Britain, of May 4, 1818, the king bound himself to make the slave-trade punishable by law. Every Dutch subject who pursued or participated in that nefarious traffic was threatened with two years' imprisonment and a fine of 5000 guilders, by the law of November, 1818. Eventually, the treaty of Brussels of December 31, 1822, gave the British cruisers the right of capturing all Dutch vessels loaded with slaves, or only equipped for the purpose of procuring them; but, to put an efficient check to the slave-trade, it was necessary to adopt severer measures, and a subsequent law pronounced sentence of forfeiture against all the vessels concerned in this trade, and threatened the principal participators in it with fines and hard labour, and their accomplices with incarceration; a prohibition was also placed on the importation, hitherto allowed, of slaves into the Dutch colonies from other parts (e. g. Brazil), where their direct introduction from Africa is still permitted. While the Netherlandish government yielded in these matters to the request of the British, the differences, produced by the commercial rivalship of the two states in the East Indies, were amicably adjusted. The Dutch were reinstated in the possession of their colonies, such as they had it in 1803. At that time they held dominion over the sultan of Palembang and Banca. In 1814, the island of Banca, with full sovereignty, was ceded by Britain to the king of the Netherlands, as an indemnification for Cochin; but, during the British rule on Java, the governor there had acknowledged the independence of the sultan in a treaty made in 1812; the British commissioner, in making the transfer, therefore, maintained that this cession to the Netherlands could only take place on condition of acquiescence in the treaties concluded in the mean while. But the Dutch government recovered its former supremacy, by deciding, in 1818, the contest of two brothers for the dignity of sultan of Palembang, making the reinstated sultan dependent on itself, and abolishing the code of laws introduced by the British. The British governor in Bencoolen (on Sumatra), Sir Thomas Stamford Raffles, immediately despatched troops to Palembang, expelled the Dutch sultan, and established his brother on the throne. The new sultan compelled, in July, 1819, the Dutch garrison at Palembang to retire to the island of Banca, and repelled several attacks of the Dutch in 1819 and 1820. Not till July 1, 1821, did the Batavian government, by means of a superior force, succeed in restoring the sultan expelled by his brother, with the aid of the British. They conducted the vanquished sultan to Batavia, where he was held under supervision. But the restored sultan left to the Dutch government at Batavia the whole civil administration of Palembang (judiciary, police, and finances), reserving for himself merely his annual income, his honours, and dignities. But the chief matter of dispute was finally settled at London, by the treaty of March 17, 1824. By this treaty, the king of the Netherlands ceded to Great Britain all his possessions and rights on the main-land of India, especially the city and fortress of Malacca, with its appurtenances; he promised never to make settlements in future on the peninsula of Malacca, nor to conclude any treaty with the native princes; at the same time, he renounced all intention to prevent the occupation of the island of Sincapore (q. v.) on the part of the British. On the other hand, the king of Great Britain ceded to the Netherlands the factory and fortress of Marlborough, with all the British possessions (presidency of Bencoolen) on the island of Sumatra. He promised never to make any settlement on that island, nor enter into any treaty with the native princes. He, moreover, renounced all intention of preventing the occupation of the island of Billeton and its appurtenances on the part of the Dutch, and he promised never to establish British settlements on the Carimon islands, or on the islands of Battam, Bintang, Lingin, or any other south of the straits of Sincapore. Neither party was to resign the above-mentioned territories to any other power, and, in case one party should abandon these territories, the other should immediately have the right to take possession of them. The mutual surrender took place March 1, 1825. By this treaty, the Netherlands have remained in exclusive possession of the Sunda islands, and of the most valuable part of the Moluccas, as well as of the spice trade with those parts; and after a short but bloody war, in 1824, they reduced to subjection the prince of Tanete, on the island of Celebes, who attempted to throw off his allegiance. In Europe, the state of the Netherlands maintained its dignity. When the dey of Algiers, disregarding the treaty of 1816, renewed, in 1824, under menace of war, the old demands for presents, the commander of the Dutch fleet in the Mediterranean, admiral Wolterbeck, replied, that the Netherlandish government had no intention of yielding to the claims of the dey; the admiral, at the same time, demanded, within twenty-four hours, an explicit declaration, whether he should consider himself at war with Algiers. The dey, hereupon (in October), desisted wholly from his demands, and signed anew the peace of 1816. With respect to the internal affairs of Italy, Spain, and Greece, the Netherlands have observed the strictest neutrality, so that, e. g. in 1823, the Dutch minister did not leave the king of Spain until his arrival in Seville. The same is the case with the Porte. The ambassadors of Russia, England, and France, when they left Constantinople, in December, 1827, placed the subjects of their powers under the protection of the Dutch ambassador. Natives of France, Spain, and Italy, obliged to leave their country on account of having shared in its internal disturbances, found an asylum in the Netherlands. For the history of the Netherlands subsequent to the Belgian revolution see the articles, *Antwerp*, *Belgium* and *Holland*.

Geography and Statistics of the Netherlands.—The kingdom of the Netherlands consisted, before the late revolution, of the seventeen provinces united under Charles V., but not altogether with the same boundaries. The county of Zütphen is united with Guelders, the lordship of Mechlin with the margravate of Antwerp; and, by the peace of the Pyrenees, in 1659, the county of Artois was ceded to France. On the other hand, Brabant and Flanders, on account of their extent, have been divided into North and South Brabant, and East and West Flanders. The district of Drenthe, formerly pertaining to Groningen, has become a distinct province. In its internal administration, the province of Holland is divided into two parts, South and North; but, in relation to the general government, it forms only one province. In Belgium, the French departmental boundaries have been made the foundation of the provincial divisions. The provinces of the late kingdom of the Netherlands are the following:—1. North Brabant (formerly Brabant); 2. South Brabant (formerly department of the Dyle); 3. Limburg (department of the Lower Meuse, with a part of the department of the Roer); 4. Guelderland; 5. Liege (department of the Ourthe); 6. East Flanders (department of the Scheldt); 7. West Flanders (department of the Lys); 8. Hainault (department of Jemappes); 9. Holland; 10. Zeeland; 11. Namur (department of the Sambre and Meuse, with the exception of Luxemburg); 12. Antwerp (department of the two Nethes); 13. Utrecht; 14. Friesland; 15. Overyssel; 16 Groningen; 17. Drenthe. According to official accounts of the year 1820, the kingdom (including Luxemburg) contained 25,375 square miles, with a population, in 1827, of 6,059,566 inhabitants, or 239 to the square mile. The kingdom (including Luxemburg) was bounded on the south and south-west by France, on the east by Germany (the Prussian-Rhenish provinces and the kingdom of Hanover), and on the west and north by the North sea. It extended from 49° 30′ to 53° 45′ N. lat., and from 2° 30′ to 7° 20′ E. lon. Among the inhabitants were upwards of 1,690,000 Dutch, 145,000 Frieslanders, 300,000 Germans, 3,360,500 Walloons, or Belgians, and 80,000 Jews. Among the Christians, about 3,414,300 were Catholics, 1,650,000 Dutch Reformed, 320,000 Lutherans, 115,000 Mennonites, 38,000 Remonstrants, and other denominations. The face of the country is, for the most part, very low in the north-west, where the Rhine, the Meuse, and the Scheldt empty into the sea. The Rhine, entering the Low Countries formerly at Schenkenschans, at present by the canal of Pannerden, separates into two branches,—the southern, the Waal (known as early as Cæsar's times under the name of *Vahalis*), and the Northern (which retains the name of the *Rhine*). From the latter, a canal, constructed by the Roman general Drusus, leads to the old Yssel, which proceeds from Munster, and, forming a junction with this river, under the general name of the *Yssel*, enters the Zuyder-Zee, between Zütphen, Overyssel, and the Veluwe. The Rhine, flowing westward, the other side of Arnheim, assumes, at Wyk te Duurstede, the name of *Leck*. A small stream, which is connected with the Leck by means of a sluice, there receives the name of the *Crooked Rhine*, and, between Utrecht and Leyden, the name of the *Rhine*. This was formerly the principal mouth, emptying into the sea at Catwyk; but, after the fearful inundation in 860, which probably threw up the greater part of the downs, had filled this arm with sand, the Leck received the great volume of water, and the *Old Rhine*, as it was called, became an inland canal, without any considerable current. To drain the circle of Rhynland of its superfluous waters, it was contemplated, more than two centuries ago, to restore the old mouth of the Rhine at Catwyk; but this difficult undertaking was first commenced in 1804, and successfully finished in three years. North of the Old Rhine, an arm of this river flows into the Zuyder-Zee, under the name of the *Vecht*. After its junction with an arm of the Waal, the Meuse has the name of the *Merwe*, which receives the other arm of the Waal and the Leck, and, after branching out into many outlets, and taking various names, flows into the North sea at Briel, where it has a considerable breadth. After having, for almost two centuries, been closed to navigation, by treaty, the Scheldt, at Antwerp, has borne again, since 1795, on its broad, navigable waters the largest vessels of all nations. At Sandvliet, where its breadth is 6000 yards, it divides into two arms (the East and West Scheldt), which surround Zeeland, and become almost imperceptibly confounded with the North sea. The Ems and Moselle also touch a small part of the country, which is, moreover, intersected by numerous secondary rivers, mostly navigated by boats drawn by horses (*trekschuyts*), and into which the contiguous *Polder* (low tracts of country diked in, and rendered inhabitable by draining) empty their superfluous water by means of hydraulic machinery. In Belgium, the canal from Mons to Condé was opened Nov. 27, 1814. It connects Mons with the Scheldt, and is of importance for the export trade of the Netherlands. The North canal is to unite the Scheldt with the Rhine, and extend from Antwerp, through Venloo and Neuss. The part which is finished connects the Meuse and Scheldt. In 1825, the arm of the sea called the *Axel Gat* was closed by a dam. In 1828, a navigable canal was in progress from the Meuse at Liege to the Moselle at Wasserbillig, which it was intended to complete in six years. By the influx of rivers, especially of the Rhine and Meuse, Guelderland and Holland are exposed to almost annual inundations, which, breaking through or flowing over the dams of the rivers, or dikes, cover whole tracts of country with water and sand, and not unfrequently render them unfruitful for a number of years. Still more dangerous to the seaboard provinces—Holland, Zeeland, Friesland, and Groningen—is the North sea, which is higher than the level of the land. This danger is in part diminished by a series of downs (*Dünen*), 90 to 200 feet high, extending from Dunkirk, in French Flanders, to the Texel. The rest of the sea-coast it is necessary to protect by means of high and expensive dikes, the maintaining of which in repair along the west coast of the Zuyder-Zee and the north coast of the Y, from Wiringerward to Beverwyk, cost, in 55 years (1732—1788), 18,571,000 guilders. In this are not included the dikes of the south and east coast of this gulf, nor those of Groningen, Friesland, Zeeland, and South Holland, with the river dikes. In 1816, 5,000,000 guilders were expended on hydraulic works in those countries. The lowest countries are Groningen, Friesland, Holland, Zeeland, and West Flanders. From France, through Hainault, Namur, and Luxemburg, extends the forest of Ardennes. Limburg also contains some hills, and Brabant, with East Flanders, several elevated forest regions. The middle of the Low Countries is a continuation of the great sandy heaths, extending from the Baltic to the Scheldt, through Brandenburg, Lunenberg, and Westphalia, interrupted by fertile intervals, and then resuming its course through North Brabant. To the south, the *Peel* and *Kempen* land, consisting of heath, sand, and marsh, reaches far into the former bishopric of Liege. The most fruitful regions in grain are Flanders, South Brabant, Zeeland, and Guelderland; in meadows and pasturage, Holland, Friesland, and Groningen. In the more elevated regions in the south-east, and in Brabant, Liege, East Flanders, Guelderland, Utrecht, Overyssel, and Groningen, the climate is very salubrious. On the contrary, in West Flanders, Zeeland, Holland, and Friesland, the instability of the weather, the fogs, the stagnant pools, the bad quality of the water, and the continual use of fish, engender perpetual fevers. Prior to 1788, the United Netherlands never supplied more than one third of their consumption in grain; but, after the decline of commerce compelled the inhabitants to pay more attention to agriculture, which has, besides, been very much promoted by two societies for the improvement of husbandry, the deficiency became comparatively small. Since the union of Belgium, which, in South Brabant, Flanders, and Hainault, produces more than a sufficient supply of excellent wheat, large quantities have been exported to England and Spain. Holland and Overyssel produce rye; Groningen, oats; the northern provinces and Brabant, buck-wheat; the southern provinces, particularly Flanders (which also produces flax of superior quality), rape-seed; Holland, Flanders, and Brabant, hemp; Zeeland, Flanders, and Holland, madder; Utrecht and Guelderland, and some districts of Belgium, tobacco. Fruits and vegetables exist in abundance almost everywhere throughout the kingdom, and especially in the well-watered sections; and garden seeds and roots (especially hyacinth and tulip roots) constitute a considerable article of export to England, Spain, France, Germany, and the other parts of the world. Wine is produced in Luxemburg, not far from the Moselle, and in Liege. The only woodlands are in Luxemburg, Hainault, Liege, and Brabant. The republic of Holland was very destitute of woods, which has been but poorly supplied by the plantation of the soft species, especially those from America. Among the productions of the animal kingdom, the chief are the Dutch cattle. In 1803, there were computed to be more than 900,000 head of black cattle, and 700,000 acres of pasturage in the Batavian republic. Considerable quantities of cattle are also raised in Limburg, and the eastern part of Liege. Friesland, in particular, raises horses which are rarely equalled in size, strength, and endurance. Numerous flocks of sheep are bred in the sandy districts of Brabant and Holland, especially on the island of Texel. The breeding of swine is much pursued, and pork is an important article of subsistence for the lower classes. In the sandy plains near the sea, there are innumerable wild rabbits: other four-footed game is scarce in the northern provinces, but abundant in the wooded provinces of the south,—Brabant, Hainault, Namur, and Luxemburg. Wild and tame fowls, especially water-fowl, exist in great abundance. Bees are raised in considerable quantities on the heaths in Guelderland and Utrecht. In Drenthe are found snakes, but of a harmless kind. The fisheries are one of the branches of subsistence in the Netherlands; and, in 1804, it was calculated that, notwithstanding the war with England, 20,000 families derived subsistence from them in the United Netherlands. The whale and herring fishery seems to be recovering from its decline. The 1500 vessels called *herring busses* employed in 1601 in the herring fishery, had diminished, in 1795—1807, to 30, but, in 1818, had increased again to 157. Oysters and muscles, used for lime, as well as all kinds of fresh and salt-water fish, exist in great abundance on the coast, and in the numerous rivers and inland waters. Of minerals, the northern provinces contain, for the most part, nothing but peat, which is obtained in large quantities in Holland and Friesland, together with argillaceous earth and pipe clay. In the southern provinces, Namur, Hainault, Liege, and Limburg, are found iron, lead and copper, calamine, sulphur, fossil coal, lime, marble, and mineral waters. The Netherlandish manufactures are among the most important in Europe, and furnish almost every thing that pertains to the wants and conveniences of life. The Holland, and especially the Leyden, woollen manufactures, formerly so flourishing, as well as those of Tilborg, in Brabant, have, indeed, very much declined. On the other hand, the manufactures of cloths at Verviers, in Liege of linen, in Flanders of lace, gold and silver stuffs, and hats, in Brabant of cambrics, in Hainault the famous linen bleaching at Haarlem, and the Belgic and Dutch dyeing establishments are still prosperous, and the Brabant lace manufactories alone put many millions of guilders in circulation. The paper, wool, and saw-mills of North Holland, the Holland smoking tobacco, and snuff manufactories, and the brandy distilleries in the provinces of Holland, Brabant, and Liege, which are at present as prosperous as they ever were, together with the tobacco-pipe manufactories at Gouda, are deserving of mention; also the breweries in Brabant and Upper Yssel. Dutch commerce began to flourish in the fourteenth century, at Bruges, in Flanders, but, at the end of the fifteenth century, left this city, in a great measure, for Antwerp, which became the first commercial place in the world. But the devastations of the war of independence with Spain, and the capture of the city, in 1585, drove the richest merchants to the Dutch Netherlands, and especially to Amsterdam, whose commerce, at the end of the sixteenth and the beginning of the seventeenth century, rose to an unparalleled height, from which it declined somewhat about the close of the eighteenth century, till the revolution of 1795 inflicted its death blow, and London, the rival of Amsterdam, rose to be queen of the ocean, on the ruins of Dutch commerce. Since 1813, the commerce of the Netherlands has been much augmented, but it is yet very far from its former extent. In 1818, 3800 vessels sailed from their ports. In 1826, 1606 vessels, exclusive of coasters, entered the harbour of Amsterdam. In 1790, of 9734 vessels which passed the sound, 2009 were Dutch, and 3788 British; in 1796, of 12,113 vessels which pursued that route, 4456 were British, and one Dutch; in 1815, of 8815 vessels, 2398 were British, and 450 Dutch. The commerce of Belgium was destroyed by the decline of Antwerp, and still more by the closing of the Scheldt; and these provinces flourished only by the fertility of their soil, and by the increase of manufactures in the last years of the Austrian government. The opening of the Scheldt, stipulated in the treaty of peace of 1795, and the exertions of the French government to promote the commerce of Belgium at the expense of that of Holland, were of little avail, on account of the continued war with Britain. The treaties of Paris and Vienna, in 1814 and 1815, placed the commercial rights of the Northern and Southern Netherlands on an equal footing. At the present day, the Dutch are the agents of Great Britain for a great part of Germany and Switzerland, in the commerce on the Rhine. They also supply England (mainly by way of Rotterdam) with butter, cheese, flax, grain, and madder, when their importation is permitted. In the trade with France, chiefly through Antwerp, the balance has been, on an average, about 12,000,000 guilders against the Netherlands; but the trade with Spain, Portugal, Italy, and the Levant, is in their favour. The trade with the United States of North America is passive on the part of the Netherlands. The gin and other commodities exported to these states cannot balance the tobacco, hides, &c., imported from America. The Dutch trade to the East and West India colonies has undergone great changes, partly by the loss of Berbice, Demerara, and Essequibo (though, as far as concerns the trade with these colonies, the British government has given the Dutch equal rights with its own citizens), partly by the decline of the East India company, and by the freedom of trade to the East Indies, bestowed on all the subjects of the kingdom (with the exception of the Moluccas and of the trade to Japan, reserved to the government of the Dutch East Indies). The liberal administration of Java has occasioned a great increase in the quantity of its products, of which North America is the chief recipient. The former lucrative contraband trade with Spanish America, by way of Curaçao, has been annihilated by the independence of that country; but, on the other hand, new resources are opened to Dutch trade in Brazil, the Havana, and Hayti. The inland trade of the Netherlands, by the interchange of various productions between the northern and southern provinces, has been highly important. After Amsterdam, the principal commercial places are Antwerp, Rotterdam, Bruges, Brussels, Ghent, Ostend, and Middleburg; the most important ports, Antwerp, Ostend, Briel, Delftshaven, Dortrecht, Enkhuisen, Medemblick, and Ziericksee. There are commercial tribunals at Amsterdam, Groningen, Middleburg, Rotterdam, and Schiedam. April 1, 1804, besides the old bank of Amsterdam, a bank of the United Provinces of the Netherlands, was established for twenty-five years. The capital consisted of 5,000,000 guilders, divided into 5000 shares. Its principal business was the discounting of commercial paper. In 1815, a commercial company was chartered at Amsterdam for twenty-five years, with the exclusive right of prosecuting the tea trade to China. The finances of the United Netherlands during the thirty-two years' peace of 1748—80 were in so prosperous a condition that the public stocks, bearing interest of two and a half per cent. were at an advance of ten per cent. above the nominal value. The war with England, the internal troubles of 1786, the war with France, and its pernicious consequences, produced an annual deficit of full 8,000,000 guilders, besides a new debt of 22,000,000, which, after the conquest of Holland, was increased to a fearful extent; and the interest on the national debt, from 1795 to 1804, increased from 18 to 34, and, subsequently, to 42,000,000; so that, in 1795—1805, it was necessary, in order to cover the yearly deficit, to raise forty-one per cent. on the capital, and fifty-three per cent. on the incomes of the owners of real estate. The consolidation, in 1798, of the provincial debts, which had been previously separated, had but a slight influence in improving the condition of the finances. More beneficial was the system of taxation introduced in 1805, by the pensionary Schimmelpenninck; but the expenditures of king Louis, who, in 1807—9, borrowed 9,000,000 to cover the deficit, in conjunction with the invasion of the British, in 1809, reduced the country to so lamentable a state, that, on its incorporation with the French empire, in 1810, Napoleon, by a reduction of the national debt to one third, virtually declared it bankrupt. One third of the debt only was declared to bear interest; but the other two thirds were deferred (*uitgestelde*, not bearing interest). The actual (*Werkelijke*) debt bears an interest of two and a half per cent. from January 1, 1815: 4,000,000 of the latter are to be annually liquidated, and their place supplied by as many of the first. The debt of the former republic of Holland amounted to 573,153,530 guilders; the deferred debt to 1,719,460,591; the whole to 2,292,614,121 guilders. The Austrian debt, incurred by Belgium, by an agreement of October 11, 1815, was fixed at 34,466,679 guilders. In consequence of such a heavy debt, it was necessary, before the incorporation of Belgium, in the first years of the regal sovereignty (1814), when trade had hardly begun to revive, to impose a tax of 63,000,000 on a population of 1,800,000 men, some of whom were in abject poverty, and on a country of whose surface five sixteenths is covered with water, three sixteenths is composed of heaths, sands, wastes, and marshes, and consequently one half only is productive of any profit. If, after the incorporation of Belgium, we rate the direct and indirect taxes at 56,200,000 guilders, it follows that each individual in the kingdom of the Netherlands paid eleven guilders, four stivers; according to others, the tax for the year 1819 amounted to sixteen guilders a head. By the budget of 1818, the expenses of the kingdom, which were afterwards, however, diminished, amounted to 74,000,000 guilders. Of this sum, 2,600,000 guilders were appropriated for the royal household, 1,170,000 for the high colleges, 320,000 for the department of secretary of state, 853,000 for the department of foreign affairs, 3,700,000 for the judiciary department, 2,000,000 for the home department, 325,000 for the department of Protestant worship, and 1,875,000 for that of the Catholic, 1,200,000 for the department of education, the arts and sciences, 25,000,000 for the ministry of finances, 5,500,000 for the ministry of the marine, 22,000,000 for the ministry of war, 4,700,000 for hydraulic works (*Waterstaat*), and 1,657,000 for contingencies. The revenue was derived from direct taxes on land, polls, furniture, doors, windows, and patents; and indirect, on salt, soap, wine, domestic and foreign liquors, beer, vinegar, peat, coal, domestic grain, and from the fees for weighing and measuring; and, moreover, from register's stamp and mortgage fees, from the taxes on inheritances, and on wrought gold and silver. The land tax was levied according to an assessment made in 1805.—The navy, which, in 1652—72, consisted of 66—150 vessels of war of all kinds, was reduced, in 1776, to twenty-five ships of the line, twenty-three frigates, and twenty smaller vessels. In the war of 1781 with England, the number was somewhat increased, so that, in 1792, the navy again consisted of sixty-six ships of the line and frigates, and forty-six smaller vessels. But, by the resignation of a great number of the most able navy officers, in 1795, by the immense losses in Saldana bay and at Kamperduin, and by the surrender of the fleet to the British, in September, 1799, the navy was again almost totally annihilated. Under the French dominion, pretty large squadrons were stationed in the Nienwe Diep and before Antwerp, of which, by the treaty of Paris, of May 31, 1814, the whole of the first and two thirds of the last were transferred to the Netherlands; so that, in May, 1814, the Dutch navy contained in all thirty vessels of war. In the year 1827, the navy contained seventy-six sail, with 2296 guns, among which were fourteen ships of the line, twenty-two frigates, eight corvettes, and six brigs. The navy list was composed of 270 officers, a lieutenant-admiral, seven vice and eight rear admirals (in Dutch, *Schout by nacht*), a commander with the broad pennant, twenty-eight captains, forty-eight lieutenant-captains, ninety-five first lieutenants, and ninety second lieutenants. Both in the higher and the lower ranks, there are many excellent officers, distinguished for their skill in navigation and naval tactics.—The army, exclusive of the national militia of 25,500 men, which, by royal summons, could be at any time increased to 80—100,000 men, amounted, with the troops in the colonies, to 43,000 men, in sixty-eight battalions of infantry, without the depots, one regiment and eleven battalions for the East and West Indies, four regiments of Swiss, ten garrison companies, a regiment of Nassau light infantry, fourteen battalions of artillery, and a corps of light artillery, a battalion of pontoniers, miners, and sappers, the corps of engineers, three regiments of carabineers, two regiments of light dragoons, three regiments of hussars, a regiment of carabineer militia, and the *maréchaussée*. On the army list, the duke of Wellington, who bears, in the Netherlands, the title of *prince of Waterloo*, stood as field-marshal, the crown-prince as general of the cavalry, prince Frederic as master-general of the ordnance and chief of the artillery, Christian, landgrave of Hesse-Darmstadt, as general of infantry, twenty-eight lieutenant-generals, fifty-four major-generals, and twenty-one aids of the king, and the two princes. The kingdom was divided into six general commands. The military contingent of the southern provinces was sixty-seven men to forty furnished by the northern; and the relative number of their forces in the army was in the proportion of 327 to 200. The number of superior officers from the Belgic provinces was much less than that from the Dutch. The officers and soldiers are well paid. In no country is there proportionately so large a number of fortified places, single fortifications, and extended lines of defence. Respecting the repairing and maintaining of them, a convention was concluded in October, 1815, between Britain and the Dutch government. Britain appropriated for the purpose her share of the French contingent. By the terms of this convention, in the Ardennes, and in Luxemburg, Arlon, Rochefort, and Dinant, were to be placed in a proper state of defence; Namur and Charleroi, changed into fortresses of the first rank, were intended, with Philippeville and Marienburg, to defend the Meuse and Sambre; and Beaumont, Chimay, Mons, Ath, Doornick, Cortryk, Menin, Ypres, Furnes, and Ostend, were to complete this line of defence. Between 1815 and the end of 1825, these works cost 96,000,000 francs, 60,000.000 francs of which were from the French contingent, and £2,000,000 sterling from Great Britain. One hundred millions were still wanted to complete them. For these works, 2000 cannons and 6000 artillerists were necessary.

The foreign possessions of the Netherlands were as follows: (how they have been apportioned between Belgium and Holland, we have not ascertained.)—1. in Asia, the island of Java (partly under the direct government of native princes, tributary to the Netherlands); the Molucca islands, standing under the general government at Batavia, and divided into the three governments of Amboyna, Banda, and Ternate; Macassar, on Celebes, Palembang, on Sumatra. New factories have been established at Borneo, on account of the gold mines. The colonies in Asia amount to 85,500 square miles, with 6,561,700 inhabitants, among whom are 52,700 whites, and 8800 slaves. 2. In Africa, 100 square miles, with 15,000 inhabitants, among whom are 14,700 slaves: in thirteen fortresses and commercial settlements on the coast of Guinea, among which are St George del Mina and Nassau. 3. In America, 10,200 square miles, 90,000 inhabitants, among whom are 5800 whites, and 77,200 slaves,—the colony of Surinam (q. v.), and the West India islands of Curaçao, St Eustatia, and St Martin. All the colonies together form 958,000 square miles, with 6,666,700 inhabitants.

By the *Grondwet* of Aug. 24, 1815, the kingdom was declared a limited constitutional monarchy, the crown hereditary in the house of Orange-Nassau. The king could wear no foreign crown. He enjoyed an annual income of 2,400,000 Dutch guilders from the state treasury. His residences were at the Hague and at Brussels. The crown-prince bore the title of *prince of Orange*, and after the completion of his eighteenth year, enjoyed an annual income of 100,000 guilders, which was doubled after his marriage. The king became of age on the completion of his eighteenth year. With respect to the guardianship of a king under age, if no regulation had been made on the subject by his predecessor, and with respect to the regency, arrangements were made by the states-general; and, till they did so, the council of state exercised the supreme power. The states-general consisted of two chambers. The members of the first, who were appointed for life by the king, and required to be at least forty years old, could not exceed more than sixty, nor less than forty. The second chamber consisted of 110 members, chosen by the provincial estates, which were composed of the three estates of the nobility, citizens, and landed interest. The period of office of one third expired every year, but they could be immediately re-elected. For eligibility, besides an age of at least thirty years, it was requisite that the person to be chosen should be settled in the province which appointed him, and be related to no member of the assembly nearer than in the third degree. The ministers of state had a seat in both chambers either as ministers (in which case, they had only a right to advise), or as members. The king sent his propositions to the second chamber, which transmitted these for ratification to the first. The states-general had the right of making proposals to the king, in which case the opening of the motion belonged to the second chamber. If a proposed law was rejected, the plan of it was never published, but withdrawn. The king exercised all acts of sovereignty, after the matters had been submitted to the deliberation of the council of state, which consisted of at most twenty-four ordinary members, who, as far as practicable, were taken from all the provinces. With respect to the members extraordinary, every thing was left at the option of the king. The king decided, and announced his decision to the minister of state. He appointed and dismissed the members of the state council and the ministers. To him exclusively belonged the management of the colonies and foreign possessions. He declared war, concluded peace, ratified treaties; but, without the consent of the states-general, he could not, in time of peace, dispose of or change any integral parts of the kingdom and colonies. The king appointed and recalled ambassadors and consuls, commanded the fleet and army, appointed and removed officers; but whatever related to peace and war, was communicated to the states-general. He had the supreme management of the public finances, and had the right of causing coins to be struck with his image. He could grant patents of nobility, and found orders of knighthood. Without his permission, no subject could receive any order, title, or dignity from any foreign prince. In him was vested the pardoning power. In his name alone was justice administered. Every arrest made by the police was immediately reported to the local judge, and the arrested person brought before him within three days. All civil sentences contained the grounds of decision. Each province had a court of justice, a criminal and civil court. To each individual was secured full freedom of religious opinion, and all religious denominations enjoyed equal protection, equal civil and political privileges, and equal claims to all dignities, offices, and employments. All kinds of divine worship were allowed which did not interfere with the public order and security. To the teachers of all religious denominations, their former provision was secured, and to those who had no sufficient income, it was allowed or increased from the public treasury. The king took care that no subject should be interrupted in the free exercise of divine worship, secured to him by the constitution, but, at the same time, that all denominations should keep within the limits of obedience to the laws of the state. No taxes could be imposed for the benefit of the treasury, except by law, and, in assessing them, no privileges were allowed. Foreign troops could be taken into service only after consultation between the king and the states-general. Of the national militia, the fifth part was disbanded in time of peace. It could in no case be sent to the colonies, and not beyond the boundaries of the kingdom, without the consent of the states-general, and even then only in case of emergency, or when, in changes of garrisons, the shortest route passed over a foreign territory. All expenditures for the troops of the kingdom were paid from the public treasury. The quartering and maintaining the soldiers, the transports and supplies, of whatever kind they might be, for the armies and fortresses, could not be imposed on one or more inhabitants or communities. If this was done, in unforeseen cases, the government made it a rule to indemnify them. The produce of the toll on roads, bridges, and locks was exclusively appropriated to the repairing and improvement of roads, bridges, canals, and navigable rivers. Every one was free to make known his sentiments and opinions by means of the press, as a suitable organ for the diffusion of knowledge and the promotion of intelligence; but every one was always responsible to society or individuals, as far as their right might have been violated, for whatever he wrote, printed, published, or disseminated. Respecting alterations of, and additions to, the constitution, the second chamber could never deliberate except when two thirds of the members were present, and could adopt resolutions on these subjects only by a majority of three fourths of those present. During a regency, no alterations could be made in the constitution or order of succession. All the alterations or additions which were resolved upon by the king and states-general, in regard to the constitution, were solemnly proclaimed, and annexed to the instrument. The title of the monarch ran,—*king of the Netherlands, prince of Orange-Nassau, grand-duke of Luxemburg.*

Administration. In the king was vested the whole executive power, and on him depended the management of all state matters. He was assisted by a ministry of state, consisting of the first president of the first court of justice, or of the supreme council of the Netherlands, as minister of justice, of the vice-president of the council of state (the king, by the constitution, being regarded as the president of it), of the heads of the various departments of war, of state, of trade, and of colonial affairs, &c. These officers formed, together, the privy cabinet of the monarch. The second highest authority, to whose discussion all laws and regulations were submitted, was the council of state, whose qualifications were defined in the constitution. A separate commission of three or four of its Catholic members superintended the worship and privileges of the Belgic church. In the late Belgic provinces, nearly the whole population consists of Catholics. In the Dutch provinces, the Calvinists constitute four sevenths, the Catholics two sevenths of the population: the remainder consists of Lutherans, Remonstrants, Jansenists, Anabaptists, Greeks, Armenians, Portuguese and (so called) High German Jews, which last enjoy, in the Netherlands, the rights of citizens. The ecclesiastical affairs of the Calvinists are regulated by councils, whose representatives form classes (so called), of which a certain number constitutes the synod of each province. The French, Walloon, English and Scotch have their distinct regulations. (Respecting the institutions of instruction, see the subsequent divisions of this article, *Language, and Literature, and Schools.*) The code Napoleon has subsisted in the Netherlands, but a commission has been occupied in elaborating a penal code, to be followed by a civil. The question, whether there shall be juries in criminal trials, and whether the proceedings shall be public, divided the Belgians and Dutch; the former maintaining the affirmative, the latter the negative. For a knowledge of the history and statistics of this country, the reader may consult Van der Wynckt's *Histoire des Troubles des Pays-Bas* (2d ed.),—the best work on the period of the French revolution; it has been used by J. J. de Smet, in his *Histoire de la Belgique* (2d ed., Ghent, 1822). See, also, professor Frederic, baron of Reiffenberg's *Resumé de l'Histoire des Pays-Bas* (Brussels, 1827. 2 vols.): the history of the Revolt of the Netherlands, by Schiller (which has been translated into French by the margrave de Chateaugiron (Paris, 1827, 2 vols.); J. J. de Cloet's *Geographie historique, physique et statistique du Roy. des Pays-Bas et de ses Colonies* (Brussels, 1822, 2 vols.); the *Itinéraire du Roy. des Pays-Bas* (Amsterdam, 1827, 2 vols.); and the *Commercial code of the Kingdom of the Netherlands.*

Language, Literature, and Poetry of the Netherlands. The language spoken in the northern part of the late kingdom of the Netherlands, and generally called *Dutch,* is derived from the Old Saxon, from which have also sprung the Anglo-Saxon (of which again the English language is a descendant), the Low German (*Niedersächsisch,* or *Plattdeutsch*), and the Flemish. The Flemish language, in its chief features and radical words, coincides with the Dutch, though it borrows many words from the French. It differs, however, from the Dutch, by a more nasal pronunciation, while that of the Dutch is more guttural. There is, however, in the Netherlands, a dialect totally different from the Dutch; that is, the Walloon, a corruption of the French. In all Flanders, Northern Brabant, and a part of Southern Brabant, the Flemish is the common language. The line of division is in Brussels, where the people of the lower city speak Flemish, in the upper city, Walloon. To the south of Brussels, in the (so called) Walloon Brabant, in Hainault, Namur, Liege, and part of Limburg, the Walloon continues to be the popular language. It is worthy of remark, that, even in that part of Flanders which has been under the French sceptre for a long series of years, the Flemish, nevertheless, is the popular language as far as Dunkirk, while, to this moment, Walloon is spoken in Hainault, Brabant, and particularly in Liege, though so long united to Germany. The dialects of the Low German, spoken in the Netherlands, may be divided into five: 1. the proper Dutch, which, as early as towards the end of the fifteenth century, was elevated to a literary language in the northern provinces; 2. the (so called) Peasant Frisian (once the literary language of Gysbert Japix), an idiom which is gradually disappearing; 3. the Gelders dialect, or the (so called) Lower Rhenish; 4. the Groningen dialect, to which also belongs the Upper Yssel dialect; and, 5. the Flemish, which has remained the literary language in the southern provinces, though much poorer than the Dutch, and overloaded with all the mongrel words, of which Coornhert, Spiegel, and Hoost have purified the Dutch. As to Belgium, the French sovereignty there of nearly twenty years greatly narrowed the bounds of the Teutonic languages, particularly in the cities, and especially in Brabant. The commencement of the independent development of the Dutch language also marks the beginning of the Dutch literature. As early as towards the end of the fifteenth century, the language was already fixed by numerous translations of the Bible, controversial writings, poems, and popular works. Gansfort and Agricola, in Groningen, were among the first who distinguished themselves as divines and scholars. Erasmus, of Rotterdam, made far greater progress. A still greater genius, Hugo Grotius, in the beginning of the seventeenth century, when science, repressed during the long struggle for liberty, began again to revive, embraced, at the same time, philology and antiquities, poetry, history, philosophy, theology, and jurisprudence in all its branches. The northern provinces were long destitute of a university: that of Louvain, in Brabant, served for all the Low Countries, until king Philip established another at Douai for his Walloon subjects, which, however, after it came under French dominion, declined rapidly. But the university of Leyden, founded in 1575, by prince William I., in order to reward the patriotism of her citizens, displayed in a valiant resistance against the Spaniards, soon exerted a beneficial influence over the whole united Netherlands. Men like Scaliger, Lipsius, Daniel and Nicolas Heinsius, Gronovius, Van Bahrle, Spanheim, and others, in ancient literature; Erpenius and Golius in Arabic; Arminius, Drusius, Coccejus, and others, in divinity; the two Snellius in mathematics,—made this university famous over all Europe. Universities were also founded at Franeker in 1585, at Groningen in 1614, Utrecht in 1636, and Harderwyk in 1647, and their competition with the university of Leyden was very advantageous to science. Towards the end of the seventeenth century, Huygens, Leeuwenhoek, Zwammerdam, Hartsoeker, and others, distinguished themselves in natural history and astronomy. New light was shed on the Oriental, Greek, and Dutch languages; also on medicine, after the peace of Utrecht, by men like Alb. Schultens, Tiberius Hemsterhuis, Lambert Ten Kate, and Hermann Boerhaave; and, under a series of distinguished men who succeeded them, these branches flourished more than ever, particularly at Leyden, which, during the whole of the eighteenth century, was indebted for many distinguished professors to the university of Franeker. Utrecht also had its Wesseling, Duker, Drakenborch, and Saxe. Among the jurisconsults, Mathæi, Huber, Noot, and Voet are distinguished. The cultivation of the Dutch language was especially promoted by grammarians, including, besides the above-mentioned Lambert Ten Kate, Sewels, Zeydelaar, Kramer, and Van Moerbeek. Dictionaries were produced by Kramer, Sewels, Halma, Moerbeek, Weidenbach, and Weiland. In philology, history, geography, mathematics, natural philosophy, and medicine, the Dutch have distinguished themselves in the highest degree by talent, erudition, and diligence, and their contributions to civil and public law are very valuable. The Dutch have always had men of the first distinction in ancient classical literature. Works of this kind, however, cannot be called a national literature, particularly if they are written, as was mostly the case with these, in a foreign language, or by natives of foreign countries. Among the men who shone at Leyden, as stars of the first magnitude, Scaliger and Luzac were born in France, Albinus in Dessau, Vossius in the Palatinate, Gronovius (properly *Grönhof*) in Hamburg; Ruhnken was a Pomeranian, Vorstius a native of Cologne, and the great philologist Wyttenbach was a Swiss. The national literature, properly speaking, of the Dutch, is deficient in originality, because mostly formed on the model of the Germans, English, and French; yet they have produced works which need not shun a comparison with those of other countries. In the seventeenth century, their poetry flourished: their native popular poetry is fine, and other poetical productions are distinguished by power, fulness, and beauty of description and language. From 1640 to 1750, their national theatre was particularly developed, and was carried to a high degree of perfection by several poets of talent. Until 1750, the Dutch theatre was much richer in original pieces than the German; and the Dramas of Van der Gon, Rotgans, Duyf, Lescalje, Benagie, and De Marre were incomparably more beautiful than what the period of Gottsched produced in Germany. Yet many of those Dutch plays are mere imitations of the French. Among the poets who distinguished themselves, are Jan van der Doos (Janus Douza of Norwik, died 1604), who is eminent as a philologist, historian, and Latin poet, here, however, chiefly mentioned as one of the first who attempted poetry in the vernacular tongue, in which Daniel Heinse of Ghent (who died 1655) followed him with great success. Peter Cornelius van Hooft of Amsterdam (who died 1647), esteemed for his histories of king Henry IV., and Belgium, and an excellent translation of Tacitus, was too artificial in his tragedies and other poems, and his language is overloaded; but, in all the poems of James Cats (q. v., who died in 1660), there breathes a true spirit of poetry, a peculiar serenity, wisdom, and piety. The Dutch call him their *Ovid*. The poems of Jan Antonides van der Goes (who died in 1687) have the reputation of correctness and elegance. Joost van der Vondel of Cologne (who died in 1679) wrote metrical translations of the Psalms, of Virgil and Ovid, satires, eulogies, many tragedies, and an epic poem, Adam and Lucifer, and has obtained the fame of a classic poet, among the Dutch. His language, if not always correct, is nervous and rich. Among his tragedies is also a Maria Stuart. A complete collection of these tragedies appeared, in 1720, at Amsterdam, in two volumes. Constantius Huggens (who died in 1687) is celebrated for his epigrams, James Westerbaan (who died in 1670) and John Adolphus Dans (who died in 1674) for their erotic poems. Among the poets distinguished for their mirthful vein are John van der Veen (who died 1660) and John Decker (who died 1664.) Luke Rotgans of Amsterdam (who died in 1710) formed himself on the model of the ancient classics, and his epic poem William III., as well as his tragedies, prove sufficiently what models he strove to imitate. Jan van Broeckhuyzen of Amsterdam (who died 1707), celebrated as a critic and a Latin poet, left also, in the Dutch language, odes, idyls, and other poems. The lyric poems of Arnold Moonen and the idyls of Wellekens should not be forgotten. Hubert Corneliszoon Poot of Abtwout, near Delft (who died in 1733), was a talented, natural poet. Adrian van der Vliet, who, besides biblical poems, wrote a poem,—The Spaniards in Rotterdam (died in 1780),—Piet. Nieuwland (who died in 1794), and several others, are much esteemed. An epic poem, called *Germanicus*, appeared in 1780, by an anonymous authoress. Besides these, we should mention, among the elder poets, Burmann, Smits; and, among the modern, Hieronymus de Bosch, Theod. van Kooten, Klijn, Kleinhoff, Kaldenbach, Bellamy, Nieuwland, Feith (q. v., who died in 1824), Bilderdyk (q. v.), Helmers, Spandow, Van Hall, Tollens, Kilmers (died in 1813), Kinker, Witsen, Gysbeek, and the Portuguese Jew Dacosta. Bilderdyk, at the same time, is a scholar of the first rank. Even from these short notices it will appear, that much effort has been made to adapt the language to elevated purposes; and these efforts have been crowned with much success. No nation has so good a translation of Klopstock's Messiah as the Dutch translation by Groeneveld (Amsterdam, 1784 to 1791, 2 vols.), in hexameters. The prose of the Dutch has, it is true, little euphony and elegance, but it is well adapted to express practical truths in a simple and popular manner. The Dutch prose would, undoubtedly, have acquired greater perfection, if their philosophical and other writers had not often made use of a foreign language. Erasmus, Lipsius, Grotius, Wyttenbach, and others, wrote in Latin, and Francis Hemsterhuys, that amiable Socratic philosopher and tasteful and ingenious writer, in French. As with philosophy, so also with history. The Dutch prose must gain by translations from foreign languages, which are very numerous in modern times. The sciences have flourished in the northern provinces, and kept pace with the progress of the times; but this is not the case in the southern provinces. Instruction in the university of Louvain has not advanced with the time; it has adhered to the dead forms of the middle ages. In this the consequences of the Spanish tyranny, which dreaded the light, have been manifested, and several improvements intended by Joseph II. were openly resisted. The abolition of the university at Louvain, during the French government, and the foundation of the Athenæums at Brussels and Liege, Ghent and Bruges, could not banish the spirit of darkness, which, as late as in 1814, may be thought to have appeared in the joy with which the restoration of the Jesuits was received. Yet there were, in the southern provinces, as well as in the northern, numerous institutions for instruction, at Louvain, Liege, Ghent. Athenæums or gymnasia are found also at Middleburg, Breda, Deventer, Franeker, Harderwyk, and Amsterdam. The kingdom had, in the year 1825, 3889 schools, with 383,970 pupils, and 75,648 schools for the poor, and primary schools. The six universities contained 2636 students; Louvain had the most (580). The northern provinces had the advantage, in gymnasia and schools, over the southern provinces. In Flanders the gymnasia flourish least. Among the institutions for instruction ought to be mentioned the artillery and engineer school of the kingdom, the military school at Delft, the institution for the deaf and dumb at Groningen, the school for naval architecture at Antwerp, the schools of navigation at Antwerp, Amsterdam, and Helvoetsluys. Other scientific institutions are, the museum at Amsterdam (a collection of pictures, drawings, works of sculpture, gems, and antiquities, and a public library): the Netherlandish institute for sciences and arts (*Nederlandsch Institut van Wetenschappen, Letterkunde en schoone Kunsten*), divided into four classes; 1. of sciences; 2. of language; 3. literature and poetry; 4. history and antiquities, and of fine arts. At Leyden there are public libraries, anatomical surgical, mathematical and philosophical collections: at Haarlem, the society of the sciences (founded in 1752), Teyler's foundation for the promotion of theology, and some other kindred branches; and an agricultural society (*Hollandsche Huishoudelijke Maatschappij*): at Groningen, the society *pro excolendo jure patriæ*, and many other societies. Thus Arnheim, Zütphen, Bergen-op-Zoom, Utrecht, Amsterdam, Enkhuyzen (where a society exists, established by the minister Jan Nieuwenhuyzen, for the education and improvement of the lower classes, and which, in 1810, contained 8000 members), Ziericksee, Breda, Luxemburg, Maestricht, Liege, Brussels, Ghent, &c., contain numerous societies for the promotion of learning, or for practical purposes. Of the transactions of the academy of sciences and arts in Batavia (founded more than fifty years ago), the tenth volume appeared in 1825. The clergy of Holland are unfavourably distinguished by a spirit of intolerance, particularly the Calvinists; and the most intolerant are generally the most esteemed. There are, indeed, honourable exceptions, but such individuals are mostly kept silent by the fear of persecution. It is still worse with the Catholic priests in Belgium. Part of the Lutheran clergy, however, are enlightened men. The most tolerant spirit, and the greatest share of knowledge to be found among the Dutch clergy, fall to the share of the Remonstrants and Mennonites; but, for this very reason, they are hated and despised by their brethren. The study of law and general jurisprudence is in a flourishing condition. The judges and lawyers have a high character. Medicine is well cultivated; but intellectual philosophy is in an exceedingly backward state. Even now, there are many who adhere to the Cartesian system. In mechanics and hydraulics, the Dutch are well known to excel.

Netherlandish School of Painters includes all the painters in the Netherlands who, since the fourteenth and fifteenth centuries, have pursued their art in a style peculiar to that country. It is divided into the *Dutch* and the *Flemish* schools. The Flemish school was founded by John van Eyk (q. v.) (born at Maaseyk, in the fourteenth century), and is distinguished by a brilliant colouring; magic effect of the *chiaroscuro;* carefully laboured, though often tasteless drawing; a strong, yet natural expression, and boldness in composition. To this school belong Francis Floris (born 1520, died 1570), called the *Flemish Raphael;* John Stradanus (de Straet), of Bruges (born 1536), who painted historical pieces and hunting scenes; Mart. de Vos (born 1520); Spranger (born 1546); Peter and Francis Porbus, father and son; Henry Steenwyk, the painter of perspective (born 1550); Dionysius Calvart (q. v.); the brothers Paul and Matthew Bril; Van Ort (born 1557); Peter Breughel, and his son John; Roland Savery, of Courtray (born in 1576). After all these came Peter Paul Rubens, the boldest painter of modern times; a man of inexhaustible industry, of gigantic imagination and power of representation, to whom about 4000 paintings are ascribed. With him the Flemish school reached its acme. Several distinguished painters follow: Francis Snyders (born 1579), whose hunting pieces excel all others in boldness and truth; Jodocus Momper (born 1580), a landscape painter, esteemed for his valleys, and the distant views which they present; Peter Neefs, the famous church painter; David Teniers, father and son, who, in representing companies of peasants, guard-rooms, taphouses, and all kinds of low-life, have hardly their equal; Gaspar de Crayer (born 1582), who approaches, in the expression and colouring of his historical paintings, to Rubens; Gerard Segers, distinguished as an historical painter; his brother Daniel, famous for flower and insect pieces. James Jordaens (born 1594), however, excelled all those who made Rubens their model. Abraham Janssen, and his pupil Theodore Rombouts (greater than his teacher) equal Rubens in colouring, but not in conception. The industrious Luke van Uden executed the landscapes for Rubens's paintings; and his views of the sky at dawn are worthy the study of every artist. Anthony van Dyk (born 1599) obtained the name of the *king of portrait painters*. He excelled Rubens in correctness and beauty of forms. Cornelius Schüt, for whom John Wildens often painted the landscapes, distinguished himself as an historical painter; Adrian Brouwer acquired fame by his excellent representations of scenes from common life; John van der Meer by his pastoral pieces; Anthony Francis van der Meulen by his battle pieces; Francis and John Milet, father and son, by their landscapes. Besides these, we might mention the names of John Bol, Wenceslaus Koeberger, Henry Goltzius, Henry van Balen, Francis Hals, William Nieuwland, James Fouquières, Philip de Champagne, Erasmus Quellin, Abraham Diepenbeck, Theod. van Thulden, John Goeimar, James of Artois, Bonewent Peters, David Kickaert, Gonzalez Coques, Peter Boel, Samuel van Hoogstraaten, John Bapt. Monoyer, Abraham Genoels, Gerard Lairesse, Arnold von Vuez, John Francis van Bloemann, John van Cleef, Pet. Eykens, Richard van Orley, Louis Deyster, Nicolas Largillière, Verendael, Robert van Oudenaerde, John Anthony van der Leepe, Caspar Verbrügen, John van Breda.—The Dutch school is distinguished for a faithful copying of nature, great finish, good *chiaroscuro*, and skilful disposition of colours, and delicate penciling; but it is reproached with choosing often ignoble subjects, and with incorrectness of drawing. Its founder is Luke of Leyden (q. v., born 1494). Its most prominent artists are Octavius van Veen, of Leyden (born 1586, died 1634), who deserves mention, also, as the teacher of Rubens. Abraham Bloemart (q. v.), of Gorcum (died 1647), painted historical subjects, landscapes, and animals, in good taste. Cornelius Poelenburg, of Utrecht (born 1586, died 1663), was peculiarly happy in painting small landscapes, with figures. Worthy pupils of his are Daniel Vertange and John van Haensberge. John Weynants, of Harlem (born 1600) is distinguished as a landscape painter; and John Daniel de Heem, of Utrecht (born 1604, died 1674), for his faithful imitation of flowers, fruits, carpets, vases, &c. The highest place belongs to Rembrandt, whose masterly colouring atones for all his defects, and Hermann Sachtleben (*Zachtleevens*), who painted fine landscapes. In the delineation of common life, the following are distinguished: Gerard Terburg, of Zwoll (born 1608, died 1681); in landscapes, John Both, of Utrecht (born 1610, died 1650); Hermann Swaneveld, of Woerden (born 1620, died 1690). Asselyn (born 1610, died 1680) painted battles, landscapes, and pastoral pieces, with a brilliant colouring and a delicate pencil. But it will be difficult to find any painter who draws more correctly, colours more beautifully, and distributes light more truly, than Gerhard Dow, or Douw (born 1613, died 1680). Peter van Laar was the inventor of the *Bambocciate;* John Fyt (born at Antwerp, 1625) was a good painter of beasts, birds, and fruits; Gabriel Metzu, who worked in the style of Terburg, excelled him in softness of penciling. The landscapes of Benenberg of Utrecht are full of life and freshness. Philip Wouvermann (born 1620, died 1668), the most famous painter of horses, produced battle and hunting pieces, horse-markets, travellers, and robbers; and his paintings, of all kinds, are highly esteemed. His pupil John Griffer painted the beautiful views on the Rhine. The landscapes of Anthony Waterloo, for which Weenix executed the figures, are sometimes cold, but please on account of the accuracy with which he represents light playing through foliage, and the reflection of objects in water. Berghen acquired the name of the *Theocritus of painters;* and perhaps Paul Potter is the only one who can dispute the superiority with him. Whilst Ludolf Backhuysen painted storms at sea with an effect as true as it is terrible, Francis Mieris distinguished himself by fine and accurate representations of many domestic subjects, and John Peter Slingeland was hardly more accurate. Godfrey Schalken, of Dort, has not yet been excelled in the illumination of night scenes. Excellent market scenes, animals, and landscapes were painted by Charles du Jardin. Adrian van de Velde painted landscapes and animals with almost unequalled perfection. For the representations of the beautiful solitudes of nature, James Ruisdael is celebrated, and for quiet, lovely moonlight scenes, Van der Neer. The former is one of the most successful painters that ever attempted to portray nature. No painter has painted more delicately, and with more finish, even in insignificant trifles, than Adrian van der Werf. The flower painter Peter van Hulst, of Dort, is not equal to James van Huysum, who is almost unrivalled in this department. We must also mention Cornelius Ketel, John van Ravestein, John Torrentius, John van Voyen, Anna Maria Schnurmans, Adrian van Ostade, John Booth, Bartholomew van der Helst, Otto Marcellis, John Goedaert, Albert van Everdingen, Henry Rokes, Gerbrandt van den Eekhout, Theodore Helmbreker, James Lavecq, Henry Verschuuring, Mary van Osterwyk, William Kalf, Adrian van der Kabel, Jan Steen, Melchior Hondekoeter, John van der Heyden, E. van der Neer, John Glauber, John van Huchtenburg, Aug. Terwestein, John Verkoolie, Cornelius de Bruyn, Charles de Moor, Francis Peter Verheyden, the two Honbraken, Rachel Ruisch, Cornelius du Sart, Frederic Moucheron, Diedr. Valkenburg, Conrad Noepel, John de Witt, and Cornelius Troost.—It is remarkable that, after a long decline of the art of painting in the Netherlands, it has begun to flourish again in the southern, as well as northern provinces of the kingdom. Among the modern painters, we should mention Van Os, Van Spaendonk, Scheffer, Pienemann, Hoges, Kuipers, Ommegang, Van Brée, Wonder, Schotels. Pienemann's picture, the Battle of Waterloo (eighteen feet wide, and twenty-five high), was bought, by the king, for 40,000 guilders, for the purpose of being presented to the duke of Wellington. Respecting the living artists of the Belgic school, information is to be found in the *Annales du Salon de Gand* (1823). The reproach of an almost exclusive adherence to common reality, has been often made to the whole school of the Netherlands, but is confined by some to the Dutch; whilst the Flemish school, they say, in its more elevated productions, has striven to represent a nobler nature. The chief question in painting, however, is not what the artist attempts, but what he accomplishes; and, if George Forster is right in saying that, in the works of the Flemish painters, we generally miss the spirit of the poet in the beauty of the manual execution, then the Dutch school would deserve the preference, because, though it takes most of its subjects from common reality, it often represents them with a poetic conception of their character. It would be better, however, to describe them both as deficient in ideal beauty, but as distinguished, in the highest degree, for faithful imitation of nature. There would still remain sufficient distinction between the two schools. That they both have great merit in respect to the technical part of the art, has never been doubted; and that they have greater merits, to a much higher degree than is generally allowed them, will be evident from a careful study.

NETSCHER, Gaspar, one of the best painters of his time, was born at Heidelberg, in 1639. His father, John Netscher, a sculptor, died when the subject of this article was quite young. Gaspar was adopted by Tullekens, a physician in Arnheim, near Utrecht. He soon showed his talent for painting, and, at a later period, intended to go to Italy to perfect himself; but he married in Bourdeaux, and returned to Holland. He settled at the Hague; and the necessity of supporting a numerous family obliged him to devote himself to portrait painting and small pieces, though his death of Cleopatra proves that he had talent and inclination to distinguish himself in the higher branches of the art, and to elevate himself above his school. Even in that point which forms the characteristic excellence of the Dutch school,—a faithful imitation of nature, and particularly of the materials of dress—he excelled the Dutch painters. The white satin and velvet, in the drapery of his paintings, and the wool of his carpets, are true almost to deception. His touch is easy and delicate. His smaller cabinet pictures are most highly valued, on account of their finish. In these he represents groups of a few gracefully drawn figures: he is particularly fond of portraying among them one female figure, in white satin. In his historical paintings, he generally selected his subjects from Roman history. He died at the Hague in 1684, and left two sons, Constantine and Theodore (called the *Frenchman*), who were also meritorious painters, but much inferior to their father.

NETTELBECK, Joachim Christian; a man who deserves to be mentioned for his patriotism, his diversified life and perseverance, exhibiting an instance of great firmness and honesty, though there is nothing brilliant in his career. He was born in Colberg (q. v.), in Pomerania, had been a sea captain, and was one of the persons (though then seventy years old) to whom Colberg was greatly indebted for the honour of being the only Prussian fortress not taken by the French, in 1807, in spite of a severe siege. Nettelbeck died in 1824, aged eighty-six years. In his old age he wrote his own life, which appeared in Leipsic, in 3 vols. It is a work of much interest, and we should like to see a good translation of it, as a relief among the many high-flown fictions of the day.

NETTLE (*urtica*); a genus of plants, consisting chiefly of neglected weeds, having opposite or alternate leaves, and inconspicuous flowers, which are disposed in axillary racemes; the fruit is a small seed, surrounded by a persistent calyx; the flowers are monœcious, or, in a few instances, diœcious. The species are mostly herbaceous, and are usually covered with extremely fine, sharp, tubular hairs, placed upon minute vesicles, filled with an acrid and caustic fluid, which, by pressure, is injected into the wounds caused by the sharp-pointed hairs. Hence arises the well-known stinging sensation, when these plants are incautiously handled. In Great Britain this stinging is of but little consequence; but, in some tropical species, it is followed by exceedingly painful and even dangerous effects. The fibre of the *U. dioica*, a common plant in waste places, both in Europe and America, resembles that of the hemp, and may be obtained in the same manner: very fine cloth and paper have been made from it, but hitherto it has not been extensively manufactured. The natives of Kamtschatka make cordage and fishing tackle from a second species; and it is probable, that several others may be employed for similar purposes. More than 120 species of nettle are known, of which four or five only are natives of the United States of America. Among these last is the *U. pumila*, or *rich weed*, remarkable for its smooth and semi-transparent stem.

NEU (German for *new*) occurs in a very great number of geographical names, like the English *new*, Greek *neo*, *nea*, Sclavonian *novy*, Russian *novoi*, and *novaia*, Spanish *nuevo*, and the Danish and Swedish *ny*.

NEUFCHATEL. NEUCHATEL (Neuenburg, or Welschnenburg), a Swiss canton, and sovereign Prussian principality, contains, with the county of Wallengin, 52,000 inhabitants, on 296 square miles, and is bounded by France and Switzerland. After various changes of masters, it came into the hands of the old French family of Longueville, which became extinct in 1707, by the death of Mary of Orleans, duchess of Nemours. The king of Prussia, as heir of the house of Orange, whose claims to the principality were acknowledged, was then called to the sovereignty, by the states of Neufchateau, and his title was confirmed by the treaty of Utrecht. In 1806, Prussia ceded it to France, and the emperor conferred it on marshal Berthier, afterwards prince of Neufchatel-Wagram. By the peace of Paris, it was restored, with additions, to Prussia. The king granted it a constitutional charter, dated from London (January 18, 1814), with the privilege of forming a separate state. In 1822, the principality was received into the Swiss confederacy, as the twenty-second canton, and is the only one which has a monarchical government. Several ridges of the Jura run through the country. The lake of Neufchatel (Neuenburgersee), twenty-eighty miles long by eight broad, is plentifully supplied with fish, and communicates with the Rhine. Grazing is extensively attended to; wine, fruits, hemp, and flax, are produced; the corn raised is not sufficient to supply the wants of the inhabitants. The manufactures are more important; the principal are lace, cotton, and clocks; a considerable trade is also carried on in cutlery, mathematical and philosophical instruments, chintz and other cotton stuffs. The freedom and mildness of the government attract many foreigners. There are about 12,000 watchmakers here, whose instruments are used over all Europe and in America. (See *Chaux-la-Fonds.*) The religion is Protestant (Reformed); there are two Catholic societies. The language is French; but German is also spoken. Half of the revenue (150,000 livres) is applied to the improvement of the condition of the country, and to the expenses of the government. The capital, *Neufchatel*, lies at the foot of the Jura, in a beautiful country, where the noisy Seyon empties itself into the lake of Neufchatel. The town is not badly built, and contains 5600 inhabitants. It is the centre of the trade of the principality. Its institutions for instruction, and other institutions, have been carried to a high degree of perfection, by means of a legacy of 3,000,000 guilders, left by Pury, a merchant, who was a native of Neufchatel, but settled at Lisbon. Pourtales, another merchant, founded an hospital by a legacy of 700,000 francs, which was much increased by his heirs. Neufchatel furnishes 1000 men to the army of the Swiss confederacy. See *Switzerland.*

NEUHOF, Theodore, baron of, king of Corsica, was descended from a noble family in Westphalia. His father, a captain in the guards of the bishop of Munster, died in 1695. Theodore studied in the college of Jesuits, at Münster, at a later period at Cologne, whence he fled to the Hague, after having killed a young man of a distinguished family in a duel. Through the mediation of the Spanish minister, he received a lieutenancy in a Spanish regiment of cavalry, destined to march against the Moors, in Africa. On account of his good behaviour, he was promoted to a captaincy. In a sally from the fortress of Oran, he was made prisoner, and was sent to the dey of Algiers, where he is said to have served, for eighteen years, as an interpreter, and to have been employed in the most secret transactions. When the Corsicans, after several unsuccessful attempts to free themselves from the oppressions of Genoa, resolved, in 1735, to form a government of their own, they applied to the deys of Algiers and Tunis for assistance, who actually sent two regiments of cavalry, under the command of baron Neuhof, with such military stores as the islanders needed. Neuhof was received with great joy, and, in 1736, was crowned king of Corsica with a wreath of laurel. He had silver and copper coins struck, and established an order of knighthood, under the name of the Order of Deliverance. In November, 1736, he left Corsica in order to obtain foreign assistance, and returned, in 1737, with military stores, purchased with the advances which some Dutch houses had made in consideration of the promise of an advantageous commerce, in olive oil, with the island. In 1738, however, French troops again reduced Corsica under the dominion of the Genoese. Theodore had been obliged to flee. In 1741, when the French retired, new troubles arose; but Theodore could not maintain himself against the Genoese and a Corsican opposition. He fled to England. Here his Dutch creditors pursued him, and he was arrested for debt. In 1756, Horace Walpole caused a subscription to be made for him, and thus enabled him to make a settlement with his creditors. But he died of grief, in December of the same year. At the back of St Anne's, Soho, in London, is a stone, erected by the earl of Orford (Walpole), in 1758, with the following inscription:—

Near this place is interred
THEODORE, KING OF CORSICA,
Who died in this Parish
December XI., MDCCLVI.,
Immediately after leaving
The *King's Bench Prison*,
By the Benefit of the *Act of Insolvency;*
In consequence of which
He *registered his Kingdom of Corsica*
For the Use of his Creditors!

The grave—great teacher—to a level brings
Heroes and beggars, galley-slaves and kings!
But THEODORE this moral learn'd, ere dead;
Fate pour'd its lessons on his living head,
Bestow'd a kingdom, and denied him bread.

NEUKOMM, SIGISMUND, a distinguished German composer, was born July 10, 1778, in Salzburg, and showed, as early as his sixth year, much talent for music. In his 15th year, he was appointed organist of the university in Salzburg, where he continued his studies with great zeal. His father, teacher of calligraphy in the university, took great care of the scientific and musical education of his son. Michael Haydn instructed Neukomm in composition, and often caused him to act for him as first organist to the court. In his eighteenth year, he was appointed *correpetitor* of the opera, at the theatre in Salzburg, on which he resolved to make music his exclusive profession. In 1789, he went to Vienna, where Joseph Haydn received him among his pupils, and treated him like a son. Until 1804, he remained in this situation, after which he was appointed chapel-master and director to the German opera in St Petersburg. A severe disease obliged him to give up this place. In 1807, he was elected a member of the academy of music at Stockholm, and, in 1808, member of the philharmonic society at Petersburg. During his residence in that city, he brought forward several of his compositions, with great applause; but he could not be prevailed upon by his friends, and his master, Jos. Haydn, to publish any of them until 1808. He then went to Paris, in order to study more attentively the higher style of dramatic music, and thence to Rio Janeiro, as composer to the prince of Brazil. In 1824, he returned to Europe, and lived with prince Talleyrand. In 1826, he went to Italy. Among his chief works is his grand *fantasia*, for the whole orchestra,—a work equally bold in conception and perfect in execution, by which he struck out a new path. Three others followed this. Of his church compositions, some of the most distinguished are his Requiem, his *Stabat Mater*, and the cantata *Der Ostermorgen*, by Tiedge. He has, besides, composed many pieces, great and small, among which is the grand opera Alexander; also psalms, cantatas, &c. All his compositions are distinguished by their thoroughness and purity.

NEUROLOGY. See *Anatomy.*

NEUROSES. See *Nervous Diseases.*

NEUSTRIA, in the geography of the middle ages; the western kingdom of the Franks, in the north of France, so called in opposition to *Austrasia* (Austria, Oestreich), the eastern kingdom of the same. The term is derived from the negative particle *ne* (not), and *Austria*. On the death of Clovis (511), his sons divided his territories into two parts, which received these names. Neustria lay between the Meuse, the Loire, and the ocean. See *France*, and *Merovingians.*

NEUTERS. See *Bees.*

NEUTRALITY (from the Latin *neuter*, neither) means, in the law of nations, that state of a nation in which it does not take part, directly or indirectly, in a war between other nations. To maintain itself in this state, a nation is often obliged to assume a threatening position, to be able to repel, in case of necessity, every aggression on the part of either of the belligerents. Such neutrality is termed an *armed neutrality*. From the state of neutrality arise certain rights and obligations towards the belligerents. A neutral nation is allowed to render any services to either of the belligerents, which do not necessarily tend to assist him in carrying on hostilities. It must not send him troops, arms, or ammunition. It cannot refuse to one what it has allowed the other; for instance, the right of marching through its territory, supplies of provisions, &c. With either of the belligerents the neutral nation has the right to conclude treaties, if they are not intended to aid the belligerent in the war, or do not necessarily presuppose a war. As, however, in war, force is the main arbiter, it is most advisable for a neutral power to conclude special treaties of neutrality, in which the rights and duties of the neutral power are settled, as it may be easily imagined that there will be always many disputed points between it and the belligerents. These doubtful points are chiefly the following:—Whether the neutral state can allow the belligerents loans, commerce, and even the right of enlisting troops; what goods are to be considered prohibited; whether they can be seized; whether a passage through its territory is to be permitted to the troops of the belligerents; how the unlawful requisitions of one of the belligerents are to be opposed; what security is to be given on this account; the compensation to be rendered if hostilities are committed in the neutral territory, &c. In maritime wars, the treatment of effects of the enemy on board neutral vessels, or neutral effects on board a hostile vessel, give rise to very important questions. (See *Contraband.*) In former times, the principle was pretty generally admitted, that the ownership of the goods on board of the vessels was the only point to be considered, and not the property of the vessels themselves. The belligerents, therefore, seized merchandise belonging to the enemy on board of neutral vessels; but they restored neutral property seized under the enemy's flag. But the endless investigations which this system caused, as a consequence of it was the searching of neutral vessels, produced, by degrees, a new and totally contrary principle, that the flag protects the cargo (*le navire neutre couvre la cargaison ennemie*, or *le pavillon couvre la marchandise*), so that merchandise of the enemy under a neutral flag was safe, but neutral merchandise under a hostile flag was good prize. This principle, since the middle of the seventeenth century, was adopted, in several treaties, particularly between France and other governments. Great Britain, however, wished to enforce the former principle in the war with her colonies in North America. The empress Catharine of Russia, on the other hand, declared in 1780, that she was willing, if necessary, to enforce by arms the new principle, "free ships, free goods." This principle formed the basis of the system of the armed neutrality, in which France and Spain joined with Russia, and to which also Denmark, Sweden, Holland, Prussia, Austria, Portugal, and Naples acceded by separate conventions with Russia. Britain opposed it; yet she was obliged, several times, tacitly to admit the principle. In the French revolutionary war, and the hostilities between Britain and Napoleon, the former returned entirely to the old principle. (See *Continental System.*) Since the peace of Paris, this point has remained unsettled. It came up again in the privateer wars of Colombia and the Greeks.—Respecting the armed neutrality of 1780, of which count Bernstorff probably suggested the first idea, see *Mémoire sur le Neutralité armée*, &c., *par le Comte de Gortz* (Basle, 1821); Tooke's *Life of Catharine II.* (vol. ii.); Dohm's *Materialien fur Statistik* (6 vols. 1782), and *Denkwurdigkeiten meiner Zeit* (1815, 2 vols.).—During the recent struggle between Poland and Russia, when Prussia was obliged to make an explanation respecting the assistance which she gave to the Russians, by allowing them to retreat to her territory, without disarming them, and to obtain provision, &c., from the same quarter, the Prussian government declared that it was not in a state of neutrality as to the two belligerents, but in a state of non-activity. This state of non-activity, however, allowed her to prevent the passage of money sent from Britain to the Poles through her territory; also to stop the couriers of other powers, and to disarm the Poles who had entered her limits. For the principle of armed intervention, see *Intervention.*

NEUTRALIZATION, in chemistry, may be thus explained: if we take a given quantity of sulphuric acid diluted with water, and add it slowly to the solution of soda by little at a time, and examine the mixture after every addition, we shall find that, for a considerable time, it will exhibit the properties of an acid, reddening vegetable blues, and having a taste perceptibly sour; but these acid properties gradually diminish after every addition of the alkaline solution, and at last disappear altogether. If we still continue to add the soda, the mixture gradually acquires alkaline properties, converting vegetable blues to green, and manifesting a urinous taste. These properties become stronger and stronger, the greater the quantity of the soda is which is added. Thus it appears, that when sulphuric acid and soda are mixed together, the properties either of the one or the other preponderate, according to the proportions of each; but there are certain proportions, according to which, when they are combined, they mutually destroy or disguise the properties of each other, so that neither predominates, or rather so that both disappear. When substances thus mutually disguise each other's properties, they are said to *neutralize* one another. This property is common to a great number of bodies; but it manifests itself most strongly, and was first observed, in the acids, alkalies, and earths. Hence the salts which are combinations of these different bodies, received long ago the name of *neutral salts.*

NEUTRAL SALTS. See *Salts.*

NEUWIED, PRINCE MAXIMILIAN ALEXANDER PHILIP, born September 23, 1782, brother to the reigning prince Augustus of Wied-Neuwied. Alexander von Humboldt's fame inspired him to distinguish himself likewise by the observation of nature. He went, in 1813, to England, and thence to Brazil. In 1815, he left Rio Janeiro, with two other Germans, Fellow and Freyreiss, and some armed companions, and went to Cabo Frio, thence to Villa St Salvador dos Campos dos Goaytacasas, nearer the sea. On the Rio-Doce he became acquainted with the warlike Botocudes, of whom he is the first who has given accurate information. In 1816, he proceeded to Villa Viçoza. On his way to Sta. Cruz and Villa Belmonte, he touched upon Jauassema, where traces of an extinct race of men are to be found. His desire to visit less known countries induced him to go as far as the frontiers of Minas Geraes. Through almost impenetrable woods, his company made their way with the axe to Villa de S. Pedro d'Alcantara, and proceeded again through woods which they left not until they had reached Barra da Vareda. The state of his health induced him to return straight through Sertam to Bahia, where he embarked, May 10, 1817, for Lisbon. The description of his journey (2 vols. 4to, with many engravings and maps, Frankfort on the Maine, 1819) shows with what knowledge and courage he has examined the country along the eastern shore of Brazil, from 13° to 23° S. latitude. He has also published treatises on subjects of natural science in the transactions of the academy of naturalists at Bonn. Of his *Abbildungen zur Naturgeschichte Brasiliens* (Weimar, fol.), the 11th number appeared in 1827. His collections are very numerous and valuable.

NEUWIED; capital and residence of the mediatized prince of Neuwied, in Prussia, on the Rhine, three leagues distant from Coblentz, in a beautiful plain. It contains 4800 inhabitants, and manufactures of various kinds of goods. It is not quite a century old. Its prosperity has been greatly promoted by the free exercise of religion, permitted to all denominations; so that it contains at present Protestants, Catholics, Moravians, Mennonites, Quakers, Jews, &c.

NEVA; a river of Russia, which issues from lake Ladoga, and, after a westerly course of about thirty-five miles, flows into the gulf of Finland, below Petersburg, by three mouths. It is from 300 to 400 yards wide, and ten or fifteen feet deep, and, of course, navigable for vessels of considerable size. It is generally frozen over from October to April. The water is pure, and is used for drinking and cooking, in Petersburg.

NEVADOS DE ILLIMANI, or ILLIMANI; a high mountain belonging to the Andes, in Upper Peru, about fifteen leagues from La Paz. It is one of the richest gold mountains of South America. A little silver has also been discovered there.

NEVIS, or NIEVIS; an island of the West Indies. It is a beautiful spot, and little more than a single mountain, whose base is about twenty-three miles in circumference. That the island was the production of a volcano, is very evident, a crater being visible on the summit, and sulphur frequently discovered in the cavities of the earth. It is well watered, and in general fertile, producing much sugar. The exports are estimated at 877,400 dollars. It belongs to the British, and is divided into five parishes, containing

15,750 inhabitants; 500 white, 250 free people of colour, and 15,000 slaves. It contains one town, Charlestown, which is fortified.

NEW. For names beginning with this adjective not given here, see the articles under the name which follow it. Thus, for New Britain, New Castile, New Caledonia, New Grenada, New Holland, &c., see *Britain, New; Castile, New,* &c.

NEW ALBION. See *Albion*, also *California, New* and *Old.*

NEW AMSTERDAM. See *New York.*

NEW ARCHANGEL, or SITKA; a port and town on the island of Baranov, in King George the Third's Archipelago, on the north-west coast of North America; lat. 57° 30′ N.; chief place of the Russian settlements there. From this place an intercourse is kept up with China and the Marquesas. The commerce is a monopoly in the hands of the Russian North American company, the directors of which are in Petersburg. See *Russia.*

NEWARK; a post-town and capital of Essex county, New Jersey, nine miles west of New York city; population, in 1820, 6507; in 1830, 10,953. It is finely situated on the west side of Passaic river, six or seven miles, by the course of the river, above its mouth, and only two or three in a direct line. It is handsomely built: many of the houses are elegant, and it is one of the most beautiful towns in the United States. It contains a court-house, a jail, two banks, an academy, and five houses of public worship, two for Presbyterians, and for Episcopalians, Baptists, and Methodists, one each. It has extensive manufactures of shoes, leather, coaches, fancy chairs, and cabinet work. The Passaic is navigable to this town for sloops of 80 tons. The cider, so well known by the name of *Newark cider*, is chiefly made in the township of Orange, on the west side of Newark. Morris canal passes through Newark.

NEW BRUNSWICK; a British province of North America, bounded north by Lower Canada and Chaleur bay, east by the gulf of St Lawrence, south by Nova Scotia and the bay of Fundy, and west by Maine. It is divided into 8 counties and 59 parishes. The population, in 1824, was 73,626. We have not been able to obtain an authentic account of the present statistics of this province, and must give only an imperfect description of it. The bay of Fundy, on the south, nearly divides New Brunswick from Nova Scotia. Passamaquoddy bay forms its south-western boundary, the bay of Chaleur its north-western, and the bay of Miramichi indents it on the east. The principal river is the St John's, which is navigable for boats to the Great falls, near the border of Maine, and a further distance of 200 miles above the falls. The other chief rivers are the St Croix, which forms a part of the western boundary, and the Miramichi, which is a considerable river flowing into Miramichi bay. The country is neither mountainous nor level. On the borders of the rivers, and in the interior of the country, there are forests of excellent timber. Great quantities of lumber, and especially of pine timber for ships, are carried down the Miramichi. Much of the land is good for tillage; but only a small portion of it is well cultivated. Lumber and fish are the principal articles of export; and the trade is mostly with Great Britain and the West Indies. The capital of the province is Frederickton. It stands on St John's river, and had, in 1824, with the parish of Frederickton, 1849 inhabitants. There is a college here; and some common schools are patronised by the colonial government. St John's city, at the mouth of the river of the same name, had, in 1824, a population of 8488. It is a flourishing city, and has an extensive and profitable trade. The tides in its harbour, and in other parts of the bay of Fundy, often rise to the height of thirty or forty feet. The other principal towns are St Andrew's, at the mouth of St Croix river, and Miramichi, on the bay of the same name. The chief executive officer of New Brunswick, entitled lieutenant-governor, and the members of the council, twelve in number, and the judges, are appointed by the king. The members of the house of assembly, twenty-six in number, are elected by the people.

NEWBURY; a town in Berkshire, England, fifty-one miles east of Bath, and fifty-six west of London. It is situated on the Kennet, which is made navigable to Reading, and joins the Thames. Near this town were two obstinate battles fought, between the royalists and the forces of the parliament, king Charles being present at both of them; the first September 20, 1643, and the other October 27, 1644. Population, in 1831, 5977.

NEWCASTLE-UNDER-LYNE, a borough-town in Staffordshire, situated on a branch of the river Trent, 150 miles from London. The town is well built, particularly the principal street, which is spacious and well paved, and it has an excellent market-place in the centre; it formerly had four churches, only one of which now remains, the others having suffered considerably during the barons' wars, were never afterwards rebuilt. The clothing trade and a manufactory of hats constitute the chief employment of the inhabitants, and are the principal sources of their wealth, independent of the coal-trade carried on in this district, which is very extensive, and a great quantity of stoneware is said to be made in the vicinity. Population in 1831, 8192.

NEWCASTLE-UPON-TYNE, an important trading town in the county of Northumberland, is situated on the north bank of the river Tyne, about nine miles from its confluence with the German ocean. It is distant from London 273 miles; from Edinburgh 123; from Glasgow 158; and from Carlisle 57. The place upon which it stands formed the eastern termination of the rampart erected by order of the emperor Adrian, A. D. 120, to defend the Roman province from the incursions of the Caledonians; and the town is supposed to have originated from a bridge over the river, built by the same emperor, and called from his family name Pons Ælii. Roman coins and other antiquities have been discovered here at different periods. When the Anglo-Saxons had expelled the Britons from this part of the country, they founded here the kingdom of Bernicia, and on their conversion to Christianity, this place was called Moncaster or Monkchester, from its being the residence of monks, who at length deserted it in consequence of the incursions of the Danes. It subsequently fell into the possession of the Scots, but on the conquest of England by William duke of Normandy, it was recovered, and a castle being erected here by Robert, the eldest son of William I., the name of the place was changed to its present designation. The town appears to have been encompassed with a wall as early as the reign of John, who granted a charter to the inhabitants; but the oldest charter extant is said to be that of Henry III., who, in 1239, bestowed on the townsmen the right of digging in the vicinity for coal and stone. In the reign of Edward I., Newcastle was taken and burned by the Scots, and one of the burgesses was made a prisoner, who, being a rich man, paid his ransom, and on his return home commenced rebuilding the fortifications, to the expense of which he largely contributed, and they were completed by the inhabitants in general, encouraged by the king, who united to the town the hamlet of Pampedon, or Pandon, which was included within the walls. This rampart is said to have been twelve feet high, and eight in thickness, strengthened with several towers, and furnished with seven gates; besides which the place was defended by a wide fosse or ditch. Newcastle, at this early period, had become one of the principal commercial ports of the kingdom; and it appears from authentic documents, that in 1280 the revenues of the town had risen to £200 a year, a considerable sum at that period. This income was chiefly derived from municipal duties on coal, the use of which for fuel did not however become general till long subsequently to this period. In 1346 seventeen ships and 314 mariners were furnished from this port, on the requisition of Edward III., for the siege of Calais. The situation of Newcastle, near the borders of Scotland, exposed it to repeated attacks during the wars between the two kingdoms. On the insurrection of the Scots against the authority of Charles I., they invaded England, and took possession of this place in 1640. This was a prelude to the civil war, during which Newcastle was garrisoned by the royalists, but it was again taken by the Scots, then in alliance with the parliament, after a long siege in 1644.

The town of Newcastle, including those parts without the walls, extends about two miles along the bank of the Tyne, and one mile from the river side towards the north and north-west; the ground being uneven, but rising as it recedes from the river. Many of the houses are built of stone, and the others of brick; the streets near the Tyne, which are the most ancient, are narrow, steep, and irregular; and the buildings on the declivity of the hill are extremely crowded, but many modern improvements have taken place; some of the streets have been widened, and a considerable number of new ones have been erected, especially in the northern and western quarters of the town. Among the principal streets may be reckoned Westgate street, Percy street, Northumberland street, Pilgrim street, Mosley street, and Dean street. Besides the churches, there are several public edifices of importance. The mansion house, or official residence of the mayor, was built in 1691. The trinity house, erected in 1505, consists of a hall, chapel, and apartments for poor brethren, belonging to a society anciently called the Guild, or fraternity of the Blessed Trinity. The exchange and town-court is a noble structure, erected in 1658; but it has since received considerable alterations. The new courts of justice for the county of Northumberland form oblong quadrangles; the ground-floor, partly below the surface of the ground, containing cells for criminals; and on the upper floor are an entrance-hall, grand jury room, law courts, rooms for the judges, &c. The north elevation of this building has a Grecian Doric tetrastyle portico; and the south elevation has a portico also of the Grecian Doric order, copied from the Parthenon at Athens. The assembly rooms, to which are attached a news-room and a library, constitute a handsome and commodious edifice, erected in 1774. The theatre royal, which is a neat and convenient structure, appropriately decorated, was opened in 1788. The bridge over the Tyne was erected in the place of a former bridge, destroyed by the great inundation in November, 1771. On an eminence commanding the town are the remains of the ancient castle. The great tower is about eighty feet high, and sixty-four feet by fifty-four in extent outside the walls, which are fourteen feet in thickness. None of the town gates remain standing, except Newgate, which has been used as the borough prison; but there is a new gaol and house of correction in Carliol street.

Newcastle is distinguished by several institutions for the advancement and diffusion of knowledge, as the literary and philosophical society, established in 1693; the literary, scientific, and mechanical institution, where lectures are delivered on natural philosophy, chemistry, &c.; the society of antiquaries, founded in 1813, a principal object of which is that of forming a collection of archæological curiosities discovered in the counties of Northumberland and Durham; the botanical and horticultural society, Pilgrim street; and the Newcastle institution for promoting the fine arts, in Blackett street. There is a valuable public library at St Nicholas' church, founded by the Rev. Dr Tomlinson; at the infirmary is a medical library; and there are some others.

The importance and prosperity of Newcastle have chiefly originated from the coal trade, for the prosecution of which the town is admirably situated on the bank of a navigable river, and in the midst of one of the most extensive coal-fields in Great Britain, or perhaps any part of the world. Coal is scarcely mentioned in history till after the grant of Henry III. relative to the right of digging for coal in 1239; but thirty-six years after that period, the commerce in this article had become very considerable, and it continued perpetually increasing, notwithstanding the prejudice against using coal for fuel was so great, that in 1306 it was prohibited in London under severe penalties. This prohibition was subsequently removed, and it appears, from Rymer's Fœdera, the trade in coal between Newcastle and London was authorized by government in 1381. In the latter end of the reign of Elizabeth the duty of 4d. a chaldron on coal exported from Newcastle produced annually the sum of £10,000. In 1699 two-thirds of the coal trade of England belonged to this town, whence 300,000 chaldrons a year were sent to the metropolis; and 600 vessels of eighty chaldrons burden each, together with 4500 men, were employed in carrying on this commerce. The quantity of coal shipped from Newcastle in 1791 was 404,367 chaldrons, sent coastwise; and 45,702, over sea; in 1801, 452,092, sent coastwise; and 50,401, over sea; in 1811, 634,371, sent coastwise; and 18,054, over sea; in 1821, 692,321, sent coastwise; and 48,097, over sea; and in 1826, 800,437, sent coastwise; and 62,620, over sea. In 1832, the quantity of chaldrons shipped was 748,348, and the port dues amounted to £7,062. It is proper to observe that the Newcastle chaldron, by which the preceding quantities are estimated, is nearly equal to two chaldrons London measure. Coal is conveyed from the pits to the river side generally by means of railways, and thence carried to the vessels in which it is exported, in keels or long-boats, manned by keelmen.

Besides coal, the exports are cinders, glass, earthenware, cast and wrought iron and steel; pig, sheet, and red and white lead, lead shot, painters' colours, tar, copperas, sal-ammoniac, lamp-black, grindstones, flag-stones, fire-stones, bricks, canvass, soap, &c. The principal articles of import are corn, clover, and other seeds, flax, hemp, linen yarn, wine, spirits, fruit, sugar, tobacco, barilla, butter, cheese, tallow, hides, skins, oak bark, coffee, mahogany, and other woods, staves, tar, iron, &c. &c. The manufactures of Newcastle and its vicinity are numerous and extensive, amongst which the principal are the iron and glass works; the latter being of high importance, and long reckoned so, as contributing an immense duty to the revenue. The founderies, soaperies, breweries, potteries, roperies, sail-cloth manufactories, and tanneries, are very large. Here are, besides, salt, lead, and chemical works; several of the chimneys erected at these works are very lofty, one of them being 257 feet high, and a shot tower, 175 feet high; here are also corn, mustard, and paper mills, malt-kilns; and colour and glue manufactories.

Newcastle has received no fewer than thirty-six royal charters from various successive monarchs, commencing with the one granted by William Rufus, in

1087; the last bestowed by James I. in 1604. Quarter sessions are held before the mayor, recorder, and aldermen, four times a year; the assizes for the county, in March and August; a court of requests monthly, for disposing of claims under forty shillings; a mayor's court, every Monday, for the determining of civil actions between freemen only, and a county court, every fourth Wednesday, before the under sheriff; the other courts are a court of common council, court of guild, and a court of admiralty. Newcastle returns two members to the British parliament. Before the passing of the reform bill, the number of freemen entitled to vote was estimated at about 6,000; but under the new bill that privilege is vested only in the burgesses residing within seven miles of the borough, and the resident householders paying a rent of £10 annually, and upwards.

The four parish churches of Newcastle are respectively dedicated to St Andrew, St Nicholas, All Saints, and St John. St Andrew's church at the top of Newgate street, is the oldest sacred edifice in Newcastle. St Nicholas is a beautiful erection, founded in 1091. All Saints, at the foot of Pilgrim street, is a modern structure, with an elegant spire. St John's church, in Westgate street, is of ancient date, built about the latter end of the thirteenth century. The chapels of ease are, St Ann's, on the new road, subject to All Saints church; and another, dedicated to St Thomas, at Barras bridge: the latter forms a most prominent architectural ornament to the town; it is adorned with a light picturesque tower, 140 feet in height, rising above the surrounding trees. The architecture is of the early English style; it was finished in 1830, from the designs of Mr Dobson, a talented architect of this town. The dissenters here are an exceedingly numerous and influential body; and so great is their preponderance, that out of thirty places of worship, no fewer than twenty-four are occupied by congregations not in connexion with the established church, including those belonging to the church of Scotland, the Roman catholic church, and the society of friends: the others comprise almost every other sect of dissenters.

The public schools are, the royal grammar-school, founded in 1525: several other endowed charity schools, besides those attached to the various places of worship; and there are upwards of twenty Sunday schools, which give instruction to nearly four thousand children.

The market accommodations here are upon a most ample and convenient scale, and the several places allotted for the sale of butchers' meat, corn, fish, and vegetables, are well adapted for the sale and purchase of these various commodities. The market-days are Tuesday and Saturday, and are numerously attended by farmers, graziers, and corn merchants. There are two fairs in the year, viz. on the 28th of August and 29th of October, of nine days' duration each, at which prodigious numbers of horses and all kinds of cattle are brought, and large quantities of woollen cloths. The four parishes of Newcastle-upon-Tyne (including those parts of the parishes of St Andrew's, All Saints', and St John's, which extend beyond the jurisdiction of the town), contained, by the parliamentary returns for 1821, 43,507 inhabitants, and by those for 1831, 55,922 persons.

Gateshead, an ancient borough and parish, comprehended in Chester ward, in the county of Durham, is situated on the southern bank of the Tyne, opposite to Newcastle, a communication with which town is effected by means of a handsome stone bridge. The history and trade of Gateshead is so intimately connected with Newcastle, that, with the exception of its religious establishments, government, and local foundations, little remains to be noticed of the town. By the reform bill, Gateshead was placed in schedule D, which conferred upon it the right of returning one member to the British parliament. Here are several benevolent institutions, alms-houses, and charity schools; and an hospital for thirteen poor brethren, called St James' hospital. A shoe fair is held here in November. The parish of Gateshead (including Gateshead fell), contained, by the returns for 1821, 11,767 inhabitants, and by those for 1831, 15,177.

NEWCOME, William, an English prelate, born in 1729. His father procured him a scholarship at Pembroke college, in the university of Oxford. From this society he removed on a fellowship to Hertford college, of which he became tutor. In 1765, he went to Ireland, in the capacity of chaplain to the lord-lieutenant, the earl of Hertford, and became successively bishop of Dromore, Ossory, and Waterford. In 1795, earl Fitzwilliam, the then viceroy, translated him to the primacy. Archbishop Newcome was the author of a great variety of theological tracts, the principal of which are a Revision of the English Translation of the New Testament (8vo, 2 vols.); an Attempt towards an improved Version of the Book of Ezekiel; a similar attempt with respect to the twelve minor prophets; on the Harmony of the Gospels; an Historical View of the English Translations of the Bible (8vo); on our Lord's conduct as a divine Teacher; a Review of the chief difficulties in the Gospel Account of the Resurrection of our Lord, and on the Duration of our Lord's Ministry. His death took place in 1800.

NEWCOMMEN, Thomas; a practical philosopher, distinguished for his successful efforts towards the improvement of the steam-engine. He was a locksmith at Dartmouth, in Devonshire, towards the close of the seventeenth century; and notwithstanding his humble situation, he engaged in scientific researches, and carried on a correspondence with his celebrated countryman, doctor Robert Hooke, to whom he communicated his projects and inventions. Newcommen, having had his attention excited by the schemes and observations of the marquis of Worcester, the French philosopher Papin, and by captain Savary's proposal to employ the power of steam in draining the mines of Cornwall, conceived the idea of producing a vacuum below the piston of a steam-engine, after it had been raised by the expansive force of the elastic vapour, which he effected by the injection of cold water to condense the vapour. Thus an important step towards the construction of the very powerful instrument in question, appears to have been owing to the ingenuity of Newcommen, who, in conjunction with captain Savary and John Cowley, took out a patent for the invention in 1705. To Watt, of Glasgow, and afterwards of Birmingham, the world is indebted for the extraordinary advances towards perfection, subsequently made in the construction of the steam-engine (q. v.)

NEW ENGLAND. (See the article *England, New*, for a few general remarks on this subject.) In 1606, the portion of North America lying between the 34th and 45th degrees of latitude was divided by James I. into two parts, called North and South Virginia, and granted to two companies. The London company were authorized to make settlements any where between 34° and 41° (see *Virginia*), and the Plymouth company received the same privilege in regard to the country between 38° and 45°. In 1614, captain Smith having examined the coasts of North Virginia, made a map of the country, and presented it to prince Charles, who changed the name to New England. In 1620, a new patent was granted to the Plymouth company, comprehending that part of the country lying between 40° and 48° from N. to S., and extending throughout the main land, from sea to sea, under the name of New England in America. This name has, ever since, continued to be appropriated to the country lying east of New York; and although it has never formed a political whole, yet as the most of the colonies which were planted in it, were founded on the same principles of government, by men of similar political and religious views and character, and have ever been closely associated with each other, and in many respects differed, and still differ, from the other colonies and states, in their institutions and internal organization, we have thought it best to give a connected view of their history, under this general head. The geographical and statistical details will be found under the appropriate heads. The governments of the New England colonies were charter-governments, while those of the other colonies were royal or proprietary; the government and ownership of the country was in the colonists, while, in the other colonies, they were both in the crown or proprietors, or the government was vested in the former, while the property of the colony was in the latter. The New England colonists were Puritans (q. v.),—a party which no less strenuously defended civil than religious liberty; and the events of the middle of the seventeenth century brought out a large number of republicans to join them. The early and general provision for common education, in New England, was another peculiarity of that part of the country. In ten years after the settlement of Massachusetts Bay, Harvard college was established. In 1647, the legislature of that province passed a law, requiring every town with fifty families to provide a school; and a similar law was adopted in Connecticut, in 1660. Provisions of the same nature were made in New Haven and Plymouth. These laws laid the foundation of the New England system of free schools. The organization of the church government is entirely democratical, and the municipal system is, in many respects, peculiar.

The first settlements on the coast of Maine were among the earliest in New England. Martin Pring, an English navigator, visited its shores in the years 1603 and 1606, and obtained some knowledge of its rivers and bays, and of the interior of the country, which he communicated to the patrons of American discovery and colonization. The Plymouth company were, in consequence, led to attempt a settlement at the mouth of the Kennebec, in 1607, which, however, proved abortive, from the occurrence of accidental circumstances of an unfavourable character. One of the most zealous supporters of this enterprise, Sir Ferdinando Gorges, urged his associates to repeat the experiment, but without success. "Finding," says he, "I could no longer be seconded by others, I became an owner of a ship myself, fit for that employment, and, under colour of fishing and trade, I got a master and company for her, to which I sent Vines and others, my own servants, with their provisions, for trade and discovery, appointing them to leave the ship and the ship's company to follow their business in the usual place." After continuing this private course of discovery several years, Gorges, conjointly with Mason, in 1622, obtained from the council of Plymouth (of which they both were members), a grant of the territory lying between the rivers Merrimac and Kennebec. The next year, in connexion with other adventurers, they sent over a number of colonists, who commenced the settlements at the mouth of the Pascataqua. Several patents of inferior extent, comprised within the limits of Gorges and Mason's grant, were issued by the council a few years after. Of these, two were situated at the mouth of Saco river, in 1630, where a permanent colony was planted the same year, under the direction of Richard Vines, one of the patentees, and a former agent of Gorges. The following year, a tract, comprehending the peninsula on which the flourishing town of Portland now stands, was conveyed, by the council, to two merchants of Plymouth (Eng.), who established a trading-house on an island near Portland harbour, and promoted the settlement of the neighbouring coast. The colonists came chiefly from the southwest of England, and were accompanied by clergymen of the established church; whence the settlements found little favour in the eyes of the Massachusetts planters. Farther eastward, without the limits of Gorges, was the Pemaquid patent, issued in 1631, to several persons belonging to Bristol, one of whom was the mayor of that city. This tract, lying about thirty miles east of the Kennebec, had been the subject of an Indian conveyance in 1625, at which date its settlement was commenced. Pemaquid (now Bristol) must be regarded, therefore, as the oldest permanent settlement in Maine. In 1635, the council conveyed to Gorges a separate title to the portion of the former grant east of the Pascataqua, having previously confirmed Mason in the possession of the western part, from whom it had received the name of New Hampshire. Gorges, in like manner, conferred the name of New Somersetshire on his grant, in compliment to the county of his birth, and took immediate measures for organizing a government. Captain William Gorges came over for this purpose, with commissions to several gentlemen resident in the province, seven of whom assembled at Saco, March 25, 1636, received from the inhabitants an acknowledgment of the proprietor's jurisdiction, and attended, for some days, to the hearing of cases in dispute, besides exercising a cognizance of criminal offences. For some reason, there appears not to have been a perfect acquiescence on the part of all the people under this early administration; for, the following year, governor Winthrop and others, of Massachusetts, received authority from Gorges, "to govern his province of New Somersetshire, and withal to oversee his servants and private affairs." It is not improbable, however, that this commission resulted from the artful and false representations of a malcontent, who had gone to England with complaints of the commissioners, and returned with this order, which the Massachusetts magistrates wisely disregarded. On obtaining a royal charter, confirming the grant of the council, and conferring the powers of lord palatine, as exercised by the bishop of Durham, upon himself, Gorges appointed a new board of counsellors for the government of his province, the name of which was now changed to Maine. The first general court, under this charter, was held at Saco, June 25, 1640, at which the inhabitants of the several plantations, being summoned, appeared, and renewed their oath of allegiance to the lord proprietor. The arrival of Thomas Gorges, Esq., with the commission of governor, occurred the same year. He presided at the second session of the court, in September, and took up his residence at the city of Gorgeana (now the town of York), of which he was likewise mayor. In the mean time, the progress of the civil war in England was becoming ruinous to those who adhered to the side of the crown; and Sir Ferdinando, in common with other royalists, found himself unable to breast the storm. Being taken prisoner, on the surrender of Bristol to the parliamentary forces, in 1645, he soon after died, at an advanced age, leaving his estate to his son, John Gorges, Esq. The governor returned to England in 1643, and was succeeded in his office by Mr Vines, during whose brief administration a title to a large portion of the province, called the Plough Patent, which had been granted by the council of Plymouth, in 1630, was revived by colonel Alexander

Rigby, a member of the long-parliament, from Lancashire, who had purchased it from the patentees. This claim embraced a tract forty miles square, in the most settled part of the province, and respected not only the soil, but also the jurisdiction of the towns comprehended within its limits. Colonel Rigby sent over, as his agent and deputy-governor, Mr George Cleaves, who had been long a resident in the province, and was probably the cause of the resuscitation of this obsolete title. Cleaves summoned a court at Gasco (now Portland), in 1644, in the name of Rigby, as "lord proprietor and president of the province of Lygonia," as the Plough Patent was denominated by its new proprietor. The inhabitants seem generally to have opposed the pretensions of Rigby; but Mr Vines, yielding to the storm, and gaining no intelligence from Gorges, resigned his commission, and removed, with his family, to the island of Barbadoes, to which great numbers of royalists flocked, at that period. Soon after (in 1646), the claims of Rigby were recognised by the commissioners for foreign plantations, in England, and the government of Lygonia became regularly established. The small number of towns and plantations remaining within the limits of Maine, as now restricted, elected Edw. Godfrey, Esq., of Gorgeana, their governor; and, in 1650, fearing they should fall into the hands of the Puritan colonies, petitioned parliament to constitute them a distinct jurisdiction, "a part of the commonwealth of England, that they and their posterity might enjoy the immunities and privileges of freeborn Englishmen," but without success. Their apprehensions were soon realized: in 1652, the colony of Massachusetts Bay laid claim to the greater part of Maine, under the pretence that it was embraced within the limits of their patent, and proceeded to exercise jurisdiction over the towns, notwithstanding the well-founded and manly protests of governor Godfrey. Lygonia, likewise, being left, by the death of Rigby, in a defenceless condition, was brought within the Massachusetts charter, although its towns were not all reduced to submission until 1658. The royal commissioners, who were sent to New England soon after the restoration of Charles II., visited Maine in the summer of 1665, and issued a proclamation, declaring the province to be under the protection and government of the king, and designating several gentlemen as magistrates for the administration of affairs, until the further pleasure of the crown should be known. Scarcely, however, had the commissioners left New England, before the authorities of Massachusetts, with the aid of a military force, resumed their sway in the province, to which the inhabitants were compelled to yield an unwilling submission. The legal proprietor, F. Gorges, Esq., a grandson of the original patentee, at length succeeded in obtaining a restitution of his title, by a formal adjudication at the palace of Whitehall, where agents appeared on the part of Massachusetts Bay, in obedience to a royal order; but, unwilling to renounce her hold upon the province, the colony had instructed her agents to purchase the title from Gorges, in case the decision was in his favour; and accordingly, contrary to the wishes of the inhabitants, and not without exciting the displeasure of the crown, the proprietor was induced to part with his title to the province for the sum of £1250. This transaction took place March 15, 1677—8. After the purchase, instead of continuing possession under the colour of a right derived from their patent, the governor and council of Massachusetts Bay, by a proclamation addressed to the freeholders of the province of Maine, dated at York, March 17, 1679—80, declared themselves to be the lawful assigns of Sir F. Gorges, Kt., and, "to the end that the above-named province might be protected in the enjoyment of their just rights and privileges, according to the rules of his majesty's royal charter, granted unto the above-named Sir F Gorges, Kt.," proceeded to organize a provincial jurisdiction. The government established at that time was composed of a president, a deputy-president, an assistant, eight justices, and an elective general court, which continued to be exercised, with the exception of the period of Andros's administration over New England, until 1692, when, by the new charter of Massachusetts, Maine was constituted a county, with the name of York, or Yorkshire. This arrangement lasted, without any change, till 1760, when the counties of Cumberland and Lincoln were incorporated, and the county of York was reduced to nearly its present limits. After the independence of the colonies was established, Maine was styled a district, although its connexion with Massachusetts remained the same, until it was erected into an independent state, in 1820. The extent of the province of Gorges was probably about one third of the territory of the state, the other portions being derived to Massachusetts by the charter of 1692. The ancient settlement of Pemaquid (now Bristol), long regarded as the *ultima Thule* of New England, was almost the only post of importance, east of the Kennebec, before that date. The French province of Acadie, so indefinite in its original asserted limits, was finally restricted, on the west, to the river Pemaquid; but even this reduced demand of territory was resisted by the English government; and, in the year 1664, the country from Pemaquid to the river St Croix was included in the well-known patent of Charles II. to his brother, the duke of York (afterwards James II.) This part of Maine was thus united, in its government, with New York, and received the name of the county of Cornwall. A strong fortress was built at Pemaquid, for the protection of the inhabitants; and considerable numbers of emigrants, encouraged by the governors of New York, established themselves on different points of the coast. The settlements were chiefly about the river Sheepscot; but the ravages of the Indians prevented their growth, and finally occasioned the total dispersion of the inhabitants, for a considerable period. The duke of York's title ceased on his dethronement as king of England; and, as already stated, the charter of king William vested the territory in Massachusetts. After the termination of Indian hostilities, and the reduction of Canada, these lands were again taken up by numerous settlers, and, from that period to the present, this portion of Maine has been constantly advancing in improvement and cultivation, notwithstanding the perplexities and serious difficulties, occasioned, for a long time, by conflicting and unsettled titles to the right of the soil. Such is a brief view of the civil history of Maine, concerning which the little information to be gleaned from writers on New England, is lamentably defective in accuracy, as well as amount. A personal and careful inspection of unpublished records and documents, enables the writer to speak of this subject with confidence.

The next colony was that of Plymouth, founded by a small body of Puritans, who had left England in 1608, on account of the persecutions to which they were there exposed, and taken refuge in Holland. During a residence of eleven years in Leyden, their number was increased by other emigrants from England; and, finding themselves subject to many inconveniences, on account of their ignorance of the language and aversion to the manners of the Dutch, they determined to remove to America. They accordingly obtained a patent from the South Virginia company, and chartered two small vessels, in one of which they sailed from Delfthaven July 22, 1620, and joined the other at Southampton. After being repeatedly obliged to put in to land, on account of the leaky condition of one of the vessels, they finally set sail from Plymouth (September 6) with only one vessel, the Mayflower, and, November 9, made the land at cape Cod. Finding that they were without the limits of the South Virginia patent, destitute of any right to the soil, and without any powers of government, they entered into a voluntary compact, as follows: "We, &c., do, by these presents, solemnly and mutually, in the presence of God and of one another, covenant and combine ourselves together, into a civil body politic, for our better ordering, and preservation, and furtherance of the ends aforesaid; and, by virtue hereof, to enact, constitute, and frame such just and equal laws, ordinances, acts, constitutions, and offices, from time to time, as shall be thought most meet and convenient for the general good of the colony; unto which we promise all due submission and obedience." This is the earliest American constitution, and is dated November 11, 1620, and signed by 41 persons. The whole company, including women and children, amounted to 101. They then proceeded to examine the coast, and finally determined to settle at a place to which they gave the name of Plymouth (q. v.). They landed here December 11 (O. S.). Cast upon an unknown shore, in a severe climate, at an inclement season; exhausted by the fatigues of the sea, and suffering from a want of suitable provisions and shelter, nearly one half of their number died within four months after their landing. At times, only six or seven were fit for duty. Before they left England, they had formed a connexion with certain merchants, for seven years, by which they were bound to carry on all their commerce in common. At the end of seven years, the shares were bought in by the colonists, and the joint property divided among them. The government was administered by a governor, chosen annually by the people, and seven persons, called *assistants*, elected in the same way. It was, at first, a pure democracy, and the whole body of the people often met and decided upon executive as well as legislative affairs. But, in 1639, a house of representatives was established. The political affairs of this colony are connected with those of the others, particularly of Massachusetts, with which it was incorporated in 1792.

The colony of Massachusetts Bay, which, as we have already seen, swallowed up several of the other colonies, and from which those of Connecticut and Providence also originated, always acted a leading part in New England. In 1628, the Plymouth company granted to a number of individuals that part of New England lying three miles south of Charles river, and at the same distance north of the Merrimac, and extending from the Atlantic to the South sea. Powers of government were given them the next year, by Charles I., as the governor and company of Massachusetts Bay in New England. The company were authorized to elect a governor and eighteen assistants annually, and required to hold four Great and General Courts annually, which were empowered to make laws and regulations for the government of the colony. A settlement was immediately made, under this charter, at Salem (q. v.), in 1628; and, in 1630, 1500 persons arrived at Charlestown, who soon after settled at Boston, and in the vicinity. These last named individuals received permission from the company to transfer the charter and government to New England; and thus what had been intended merely as the organization of a company, became the constitution of a state. The government was, at first, administered by the governor and assistants; but, in 1634, the people claimed a participation in it, and declared that the General Court (the name which the two legislative houses still bear in Massachusetts) alone had power to make laws, impose taxes, and appoint officers. This, therefore, became a fundamental part of the constitution. The assistants and the deputies of the people at first met in the same room, and the former claimed a negative on the acts of the latter. The disputes to which this subject gave rise were not settled until 1644, when it was determined that the legislature should consist of two separate bodies, each having a negative on the other. Although the charter gave no judicial authority, this power was assumed, and courts of justice created, and, in criminal cases, the Mosaic law was mainly followed.

The first colonists of Connecticut went from Massachusetts in 1635, and were governed by persons called *magistrates*, who were empowered, for that purpose, by the legislature of Massachusetts. But being out of the limits of the Massachusetts charter, they established (1639) a constitution for themselves. The colony then consisted of 800 persons, in the three towns of Hartford, Wethersfield, and Windsor. The substance of this constitution was contained in the charter granted by Charles II., in 1662, and continued, without any material alteration, to be the fundamental law of the state until 1818. New Haven, which now constitutes a part of Connecticut, was settled in 1647, by a company of Puritans, who, having no powers of government, and no right to the land, except by agreements with the natives, also constituted themselves into a body politic, and established a form of government. This colony was included in Connecticut by the charter of 1662.

In 1634, Roger Williams (q. v.), a minister at Salem, was banished from Massachusetts, on account of his religious opinions. With a few followers he fixed himself at Providence. A few years afterwards, Mrs Hutchinson, and some other persons, also banished from Massachusetts for religious differences, purchased of the Indians (1638) the island now called Rhode Island (q. v.); and thus two new communities, with distinct governments were formed. The members of both of them made civil compacts among themselves, in the same manner as had been done by other colonies. In 1644, Williams obtained a charter of incorporation, from the commissioners of plantations (created in 1643), for the inhabitants of the towns of Newport, Portsmouth, and Providence, under the name of the *Providence Plantations*, with full power to rule themselves, under such a form of government as they should adopt. In 1663, they received a new charter from Charles II. In 1643, the colonies of Massachusetts, New Plymouth, Connecticut, and New Haven, formed a confederacy, under the name of the *United Colonies of New England*, which lasted about forty years, until they were deprived of their charters by James II. By the articles of confederation, they entered into a perpetual league of friendship and amity, for offence and defence, each colony retaining its own government and jurisdiction, in domestic concerns. Two commissioners of each of the confederates formed a board for managing the common affairs of the confederacy. During the ascendency of the parliamentary party and the protectorate of Cromwell, the New England colonies were particularly favoured; but, on the restoration, they began to be viewed with an evil eye, and, in 1664, royal commissioners were appointed to visit them, and hear and decide all complaints and appeals, civil, criminal, and military, according to their discretion. But the colonies were, as Lord Clarendon expressed it, already hardened into republics, and the commissioners found themselves unable to execute their powers. The crown still persevered in its arbitrary measures, and, in the last years of Charles II. and the first of James II. (1684—1687), declared the colonial charters forfeited, and their liberties seized into the king's hands. Sir Edmund Andros was appointed governor-general of New England (1686), with instructions to allow no printing-press. The next year he marched, at the head of a body of troops, to seize the charter of Connecticut: the assembly convened, and the charter was brought out into the room, where they met to confer with Andros; the conference was prolonged till night, when the people rushed into the room, extinguished the lights, and secreted the charter in an oak tree, which is still shown in Hartford (q. v.). The inhabitants, in many places, refused to pay the taxes; and, some rumour of the landing of the prince of Orange in England (see *William III.*) having reached America, the people of Boston (April 18, 1689) and neighbourhood appeared in arms, seized the governor and the captain of a frigate in the harbour, compelled the castle to surrender, and thus effected a complete revolution. Delegates from the towns soon after assembled, and voted to resume the government according to charter rights. Connecticut and Rhode Island resumed their charters; but although the people of Massachusetts petitioned for the restoration of theirs, their petition was refused; and, in 1692, a new one was granted, by which the appointment of the governor was vested in the crown. The colonies had been repeatedly involved in hostilities with the different Indian tribes; but the most destructive war took place in 1675—1676, when Metacom (Philip), the most formidable enemy they had met with, by his cunning, his boldness and activity, formed an extensive combination of hitherto hostile tribes, with the purpose of extirpating the English. His death in 1676, after several defeats, was a fatal blow to the power of the natives in New England. The wars between England and France, from 1690 to 1713, subjected the colonies to the attacks of the French, then in possession of Canada, and their allies, the Indians, and, for nearly twenty-five years, a large portion of the inhabitants were in the field, or obliged to guard their possessions at home: their resources were diminished; the fields uncultivated; their villages burned, and their growth checked. After the restoration of peace, they had to contend with the restrictions imposed on their trade and manufactures, and constant attempts to encroach on their liberties, by the mother country. Yet the cheapness and plenty of land, the industry, activity, frugality, and intelligence of the inhabitants, and the freedom of their constitutions of government, rapidly promoted their increase in wealth and numbers. The population, which, in 1700, was about 120,000, was nearly 400,000 in 1750. The seven years' war, (1756—1763), which terminated in the destruction of the French power in America, and secured to Great Britain all the country east of the Mississippi, was an important era in the history of the colonies. From that time began a new system of colonial policy in England, which led to the American revolution. As all of the colonies were equally interested in these events, and became more closely united in their common opposition to the mother country, it is unnecessary to give, here, a detailed account of the measures adopted, and the events which ensued from them, since they would be little more than a repetition of what is given in the article *United States*. (For the history of Vermont, see *Vermont*, and *New York*.) The six New England states have, by the census of 1830, a population of 1,954,611.

NEW FOREST; a large tract in England, in Hampshire, about fifty miles in circuit, which contained many populous towns and villages, and thirty-six mother churches, till it was laid waste and turned into a forest by William the Conqueror. King Henry VIIIth built some castles in it, and it has now several towns and villages. It is situated in that part of Hampshire which is bounded east by Southampton river, and south by the British channel. This is the only forest which belongs to the crown, of which the origin is known.

NEWFOUNDLAND; an island in the North Atlantic ocean, separated from the continent of North America by the straits of Belle Isle and the gulf of St Lawrence, first discovered by Sebastian Cabot, in 1497. It is of a triangular form, 380 miles in length, and varying in breadth from 50 to 300 miles, and, without including the windings of the coast, is 900 miles in circumference; lon. 52° to 59° 40′ W.; lat. 46° 45′ to 51° 46′ N. The head-lands, as well as the general line of the sea-coast, are high and bold, and form numerous secure and commodious harbours. Of the interior little is known, since, with one or two exceptions, it has never been traversed except by the aborigines of the country. Several high hills, supposed to be near the centre of the island, may be discerned from the sea; but the inland country is represented as generally level. It is covered with heath, and a species of dwarf fir and spruce, except on the margin of the rivers and lakes, where various trees grow to a considerable height. The island is on all sides indented by spacious bays, which extend far up into the country, and upon the harbours and coves of which are the stations and settlements whence the fisheries are carried on. The most extensive are White, Notre Dame, Bona Vista, Trinity, Conception, St Mary, Placentia, Fortune, and St George's bays. A large section of the sea-coast, comprehending the northern end and western side, has been ceded to the French, who also possess the small islands of St Pierre and Miquelon, which are situated in the entrance of Fortune bay. The climate of Newfoundland is generally represented as excessively severe, but this is by no means true. The winter usually commences about the middle of December, and the weather continues cold until March, but not so severe as in Canada and other portions of the main land several degrees farther south. In the spring, large masses of ice are brought by the currents from the north seas, and frequently block up the bays and harbours; and in the midst of summer, icebergs, or mountains of ice, may occasionally be seen. The climate is, in consequence, very variable, and vegetation seldom commences before the month of May. Such is its rapidity, however, that many kinds of vegetables are produced in perfection; and, although agriculture has, until of late years, been almost entirely neglected, yet experiments have proved that the soil is capable of cultivation, and that the climate will mature oats, barley, wheat, and almost every thing necessary for the subsistence of the inhabitants. For their principal supplies of corn and other provisions, however, they are, and must, in a great measure, remain dependent upon other countries. This island has always been famous for the cod fisheries which have been carried on upon its shores and banks. These were first prosecuted by merchants and adventurers from the West of England, who used to resort to Newfoundland in the spring, lay up their ships, pursue the fishery until the season was ended, and then return to their homes upon the approach of winter. The value and importance of these fisheries induced these adventurers to seek for a monopoly; and they accordingly procured several acts of parliament to be passed, by which their interests were exclusively protected. The objects of these acts was, mainly, to prevent any permanent settlement being made upon the coast, the whole of which was dedicated to the purposes of the fishery, and the cultivation of the soil or cutting of wood within six miles of the sea, was expressly prohibited. Notwithstanding these statutes, however, settlements were made, which have progressively increased to such an extent that the island can now boast of a resident population of 80,000 souls. The British government, seeing the impolicy, as well as the impossibility, of preventing settlements, have repealed all the old prohibitory statutes, and directed the lands to be granted. The cod fishery is now principally carried on by the planters and coasters, in small boats from the shore; though many larger vessels are still employed upon the bank and along the coast of Labrador, which is a dependency of the government of Newfoundland. This fishery commences in April or May, and continues until the end of October. The number of inhabitants engaged in it is about 25,000. The fishery carried on by the French is transitory. The fishing ships from Brest, St Maloes, and other ports, rendezvous at St Pierres, or at Croque (a station on the east side of Newfoundland), and, after the end of the season, return to France for the winter. The cod fishery has much declined, but another, now of much greater value, has lately engaged the attention of the inhabitants: this is the seal fishery.—The fields of ice, which are annually swept by the currents from the Polar seas, are carried along the eastern coast of the island, and bring with them myriads of seals. The vessels engaged in this fishery are from fifty to two hundred tons burthen, carrying from fifteen to forty men. They are fitted out from St John's, Harbour Seau, Carbonear, and other ports, about the first of March, and proceed to sea until they meet the ice. The vessels are then forced as far as possible into the fields, and the crews disperse on all sides in search of the seals, which are very inactive and easily taken. These animals are valuable only for the fat and skin, which are stripped off from the body with great facility. There are several species. About 500 sail of vessels and 10,000 men are engaged in this fishery, which is over by the end of April. Newfoundland has not yet any local legislature, nor have the people any voice in the government. The laws and statutes of Britain extend to the island, and the executive government is vested in a governor and council. There are courts of criminal and civil jurisdiction, and justice is administered by a chief judge and three assistant judges.

The aborigines of the country are now supposed to be extinct. They were generally called *Red Indians* by the Europeans, from their custom of painting their faces; but they denominated themselves *Beoths*, or the *Beothic* tribe. They are represented as having no resemblance in their appearance, manners, customs, or language, to any of the North American tribes, and they have been supposed to be the descendants of some ancient Scandinavian colony. They were a very harmless, inartificial race, who subsisted upon the deer and other animals which they entrapped in pits and snares. They were formerly very numerous, but their dread of the settlers drove them from the sea-coast into the interior, where they were often unable to procure food. A few years ago, five or six stragglers came to one of the settlements in extreme want, representing themselves as the only remnant of their race. The account they gave was, that, owing to excessive cold and the depth of the snow, they and their brethren were prevented from procuring food, and had set out from their encampment in the hope of reaching the coast, but that the rest had perished by the way. Two of this remnant, only, lived to reach St John's, where the last died in 1828. Since then, the strictest search has been made, but not a trace of the tribe has been discovered.

The trade and commerce of Newfoundland is extensive and valuable. It supplies Portugal, Spain, and the Mediterranean, with fish, and its oil is shipped to Britain. The principal towns are St John's, Harbour Seau, Carbonear, Placentia, and Ferryland. The inhabitants may be reckoned at 80,000; of which one-third are Catholics, and the remainder are Protestants of various denominations. St John's, the capital of Newfoundland, on a bay of the same name, is in lon. 52° 29′ W.; lat. 47° 32′ N.; population, about 12,000. It has one of the best harbours in the island, with from ten to seventeen fathoms of water, up to King's wharf, a mile from the mouth of the harbour. The fish caught on the banks are dried and packed here for Europe. The streets are narrow and dirty, and the buildings generally mean. The government house is a large and handsome building. There is a Roman Catholic chapel, an English Episcopal church, Wesleyan chapel, and Independent meeting-house. St John's is the residence of all the public officers. About 500 troops are generally stationed here. This town has suffered greatly by fires. In February, 1816, a conflagration occasioned great loss; in 1817, November 7, 135 buildings were burned; property destroyed estimated at £500,000; on the 21st of the same month was another great fire; and, in 1818, August 21, a fire again broke out, by which great loss was incurred.

NEW GEORGIA. See *North America*.

NEW GRENADA. See *Grenada, New*.

NEW GUINEA; next to New Holland, the largest island of Australia; between 0° 15′ and 10° S. lat.; and 131° 20′ and 149° 20′ E. lon.; square miles, 275,600; population, 500,000. It is separated from New Holland on the south by Endeavour and Torrey's straits, from New Britain on the east by Dampier's straits, and from Gilolo by Pitt's straits. It was discovered by the Spaniards, in 1528 and 1543, but is still little known. Forrest merely anchored on the northern coast, and Cook landed on the southern shore. Dampier, Carteret, Bougainville, D'Entrecasteaux, only visited some of the neighbouring islands. Le Maire and Schouten, who sailed along the greatest part of the north coast, had several interviews with the natives of the surrounding islands, but did not land upon the main island. On the western coast lie several small islands, which are connected with the Moluccas. The coasts appear to be high and mountainous. In the interior there are some lofty mountains, covered with perpetual snow and volcanoes. In some parts they rise above each other in three successive ranges. Swine, dogs, birds of paradise, parrots, sea fowl, fish, ginger, cloves, nutmegs, cocoa, betel, sago, bread-fruit, bamboo, &c., are found here. The inhabitants are a negro variety; they have projecting lips, a flat, broad nose, a large mouth, large eyes, shining black hair, and a black, rough skin; they are strongly built, and go nearly naked, having only a thin stuff made of the fibres of the cocoa nut, round their loins. The habitations on the coast are built on piles, with a sort of a bridge, extending above high-water mark; a dwelling of this kind is occupied by several families. The furniture consists of some mats, an earthen pot, a hearth, &c. The men appear to be employed only in war and the chase. Cook observed, in one part of the country, a peculiar weapon used by the inhabitants: it was a short club, which they swung on both sides; fire and smoke were seen at the same moment, as on the discharge of a musket; but there was no report, and the appearance was of short duration. The Chinese, who trade with the inhabitants, appear to have introduced some of the rites of the religion of Fo among them. Voyagers have observed three varieties of inhabitants, the Papuas (negroes), Haraforas, who are said to live on trees in the interior, and the Badshoos or Oran Badshoos, a wandering tribe of fishermen.

NEW HAMPSHIRE, one of the United States of America, is situated between 42° 41′ and 45° 11′ north latitude, and between 70° 40′ and 72° 23′ west longitude from Greenwich. Its extreme length, from north to south, is 168 miles; its greatest breadth is ninety miles. North of latitude 42°, the state decreases in width, and at the northern extremity it is only nineteen miles wide. New Hampshire is bounded on the north by the highlands between Lower Canada and the United States; on the west by the western bank of Connecticut river, from its northerly source to the south point of Hinsdale, below the entrance of Ashuelot river; south by Massachusetts; east by the Atlantic, a distance of eighteen miles, and by the state of Maine. Its area is 9491 miles, or 6,074,240 acres, including about 110,000 acres of water. This state is divided into eight counties. Near the seacoast, the land is low and level, and the shore is mostly a sandy beach, bordered by salt-marshes. At the distance of thirty or forty miles back from the sea, the country rises into hills, and often into mountains. Between the Merrimack and the Connecticut many considerable mountains are found, as the Monadnock, in Dublin; Sunapee, in Fishersfield; Kearsarge, in Warner; Carr's mountain, in Warren; and the Moosehillock, in Coventry. But the most elevated mountains in this state, and the highest on this side the Mississippi, are the White mountains. The soil of New Hampshire is generally fertile, though it is probably inferior to that of some of the other northern states. The best lands are those on the borders of the rivers, which are annually overflowed. The hills are generally of stony and moist land, and afford excellent pasturage. There are no extensive barrens, and most of the land is capable of cultivation. The high ridge of mountains which divides the waters of the Connecticut from those of the Merrimack, is composed of the older primitive rocks. Granite predominates at the northern and more elevated part of the ridge; mica slate is more abundant in the southern part, and forms the Grand Monadnock and several other high elevations. A beautiful, fine-grained granite occurs in many parts of the state: this affords an admirable building stone, and great quantities are transported to Boston. Eastward of the great ridge, mica slate, gneiss, and green stone are found. Steatite, or soapstone, of good quality, is found at Orford and Francestown; and primitive limestone abounds in several places. Iron ore, of excellent quality, is found at Franconia, and copper ore has been discovered at the same place. Plumbago, or black lead, is found at Bristol and some other places, in large quantities, and of good quality. These are the only minerals that have been found in such quantities as to be much regarded. The largest collection of waters in New Hampshire is lake Winnipiseogee. Besides this are Squam, Ossipee, Newfound, Sunapee, and Spafford's lakes, and lake Connecticut, in the most northern part of the state. A part of lake Umbagog is in this state, and a part in Maine. Five of the largest rivers in New England have their principal sources in New Hampshire, viz., the Connecticut, Merrimack, Androscoggin, Saco, and Pascataqua. The state is remarkably well watered, and the water is generally of the purest quality. The population of New Hampshire in 1810 was 214,460; in 1820, 244,161; in 1830, 269,533. By far the greater part of the inhabitants are engaged in agriculture. The principal articles of produce are beef, pork, mutton, butter, cheese, wheat, rye, Indian corn, oats, barley, pulse, and flax. The state is admirably adapted for grazing. Apples are very extensively cultivated, but other kinds of fruit are not abundant. Dover, Exeter, Peterborough, Franconia, Pembroke, and Keene, have considerable manufacturing establishments. There are no large towns in New Hampshire. Portsmouth is the most populous, and Concord is the seat of government. There are numerous thriving and beautiful villages. The common schools are well supported, and flourishing academies are established in many towns. Dartmouth college is at Hanover. The principal religious denominations are Congregationalists, Baptists, and Methodists. The climate is subject to the extremes of heat and cold, and to great and sudden changes. The air is generally pure and salubrious, and the state is remarkable for the longevity of its inhabitants. Morning and evening fires are frequently needed as early as the first of September, and as late as the last of May. Cattle are housed about the first of November; and, in the course of this month, the earth and rivers usually become frozen, and covered with snow. The open fields are commonly cleared of snow in April.

New Hampshire was discovered by captain John Smith, an English navigator, in 1614. Its name was given by captain John Mason, the original patentee. In the earliest grant made to Mason and Gorges, in 1622, it is styled *Laconia;* and, in some of the earliest histories, it is called *Captain Mason's Patent*, and *Pascataqua*. The first settlements were made at Dover and Portsmouth, in 1623. In 1629, Rev. John Wheelwright purchased of the Indians the country between the Merrimack and the Pascataqua from the ocean back about fifty miles. From the year 1641 to 1679, all the settlements in this state were united with the colony of Massachusetts, and belonged to the county of Norfolk. In 1679, New Hampshire was made a separate province by Charles II. From 1689 to 1692, it was again united to Massachusetts; and also from 1702 to 1741. From 1699 to 1702, it was united with Massachusetts and New York. Benning Wentworth was appointed governor in 1741. A temporary government was established during the war of the revolution. A new constitution was established in 1784; and this, as altered in 1792, is the present constitution of the state.

NEW HEBRIDES; a cluster of islands in the South Pacific ocean, first discovered by Quiros, in the year 1506, who supposed them to be a southern continent, and called them *Tierra Australia de Espiritu Santo*. Bougainville, who explored them in 1768, called them the *Archipelago of the Great Cyclades*. Cook visited them in 1773, and gave them the name of *New Hebrides*. They are in general mountainous, and abound in wood and water. Their principal productions are bread-fruit, cocoa-nuts, and plantains, yams and sugar-canes. The inhabitants appear civil and hospitable, and are of different races. Lon. 166° 40′ to 170° 21′ E.; lat. 14° 30′ to 20° 5′ S.

NEW JERSEY is one of the thirteen original states of the American union; bounded on the north by New York, on the east by New York and the Atlantic ocean, on the south by the ocean, and on the west by the states of Delaware and Pennsylvania. The Hudson river divides it from New York on the east, and on the west are the Delaware river and bay. The length is 163 miles, and the breadth 52 miles; between lat. 38° 17′ and 41° 21′ N., and lon. 75° 30′ and 73° 53′ W. The area in square miles is 7490. The census of

1830 shows a population of 320,779, and an increase of 43,204 since 1820. The territory is divided into fourteen counties—Bergen, Morris, Sussex, Warren, Essex, Somerset, Henderson, Middlesex, Burlington, Monmouth, Gloucester, Salem, Cumberland, and Cape May, and these are subdivided into townships. The face of the country presents every variety; from the north to the south is found a succession of mountains, hills, heights, and plains, each occupying a distinct and well defined region. The southern section of the state, from the Rocky hill ridge, in the county of Middlesex, is an alluvial formation, of which the soil and face of the country, trunks of trees, oyster-shells, and various marine productions, found at great depths, in wells and other excavations, furnish satisfactory proof, strengthened by the fact that, in this part of the state, the hills face the north, are precipitous, and lie on the southerly side of the valleys, from which, on the northerly side, the land rises in a gentle slope, evidently caused by the breaking and subsiding of the waves, bearing in their force the sands of the ocean. The principal internal waters are Second river, Hackensack, Passaic, Raritan, Musconetcong, Rancocus, Salem, Shrewsbury, Tom's river, Great Egg-harbour, Cohanzey, and Maurice river. Raritan bay is a spacious estuary on the eastern coast, affording a ready access, at all seasons, from the ocean to Perth Amboy, the chief seaport of the state, and possessing, for this purpose, peculiar and admirable advantages, which have not yet been adequately improved, from the proximity of the commercial emporium of the nation. The Swedes early made settlements in the county of Salem, where some of their descendants still remain, and the names of places given by them are, in some instances, retained. Dutch emigrants spread at an early period from New York, over the county of Bergen. The province was granted by king Charles II. to his brother James, duke of York, by charter, dated in 1664; and being by the latter speedily granted to subordinate proprietors, the settlements of the British rapidly extended. It was, in 1676, set off into two great divisions—East Jersey and West Jersey; each belonging to different proprietors, who held both the right of soil and the powers of government, the latter of which were exercised by governors appointed by the proprietors, and representatives chosen by the people. The proprietary government continued until the year 1702, when the powers of government were surrendered to queen Anne; and the colony remained a royal government until the declaration of independence, the governors being appointed by the crown, and the legislature chosen, as before, by the people, but afterwards representing the whole community, and sitting alternately at Burlington and Perth Amboy, then the principal towns of the respective divisions. In the grants and concessions of the proprietors, under which the colony was settled, the soundest and most liberal principles of civil and religious liberty are declared. These were sedulously cherished by the early colonists, and were, in many controversies with their governors, both proprietary and royal, maintained by the representatives of the people with great firmness, zeal, and intelligence. A sincere attachment to the interests of the mother country was, nevertheless, felt and displayed on all occasions, and was practically manifested in the moneys expended and the blood shed in the expeditions to Canada, and on the borders of lake Champlain, and was maintained until arbitrary exactions and unconstitutional oppression compelled the people, in common with the other colonies, to look to a separation. In the preparatory measures and conventions the delegates of New Jersey were always found. She was among the earliest to resolve on independence, unquestionably the second to comply with the recommendation of the continental congress, and form for herself a constitution of government. One of the earliest members of the first confederation, she adopted promptly, and with peculiar unanimity, the present constitution of the United States. During the war of the revolution, her patriotism was eminent. Some of the most interesting scenes and of the most arduous conflicts of that period, took place within her bounds. Her privations and sufferings were great, from having been long occupied by the rival armies and the seat of hostilities; and at the close she was found to have advanced largely beyond her proportion of the pecuniary expenditures of the contest.

The legislature is composed of two bodies, the legislative council and the general assembly; the former having fourteen members, one from each county; the latter, fifty members, the counties being represented by different numbers, from one to five. The governor is annually appointed, and, like most of the executive, judicial, and military officers, by the two houses in joint meeting. The judicial powers are distributed among a court of chancery, modelled according to the English system, the governor being chancellor, a supreme court of common law jurisdiction over the whole state, with a circuit court for the trial of issues of fact in civil cases in each county, courts of common pleas in the several counties for the trial of civil causes, orphans' courts for matters of testament, administration, and guardianship, and courts for the trial of small causes before justices of the peace. The courts of criminal jurisdiction are courts of general quarter sessions of the peace, courts of oyer and terminer, and general jail-delivery, the supreme court, and the governor and council for the trial of impeachments exhibited by the house of assembly. The military force of the state, according to the official report of the adjutant-general for the year 1830, is 35,360, consisting of cavalry, 1810, artillery, 1886, riflemen, 1115, infantry, 30,456, and general and brigade staff, 93. The literary institutions are two colleges, numerous excellent academies, and many valuable private schools. The college of New Jersey at Princeton has long and justly maintained a high reputation, and numbers among its alumni many of the most eminent men of the Union, especially in the Southern States. The other institution, a few years since reorganized under the name of *Rutgers' college*, has already earned distinction. A theological seminary of the Presbyterian church is established at Princeton, and another, under the charge of the Dutch Reformed church, at New Brunswick. A great attention to the cause of public education has recently arisen throughout the state, and measures are in progress which promise important and happy results. A liberal spirit of public improvement has been awakened, and is now encouraging and carrying on a number of works of great public utility.

The people of this state are chiefly engaged in agriculture and manufactures, and but few, comparatively, are employed in commerce. While some parts of the state are sandy and barren, or, being rocky and mountainous, are not well adapted to cultivation, large portions have a soil of great fertility, well suited to the cultivation of grain, and for grazing; and, accordingly, upon the extensive meadows, herds of cattle are raised for the markets of New York and Philadelphia. Large quantities of butter and cheese of superior quality are made. The breed of horses is excellent. Apples, peaches, and fruits of all kinds, are raised in abundance. The Newark cider and the Burlington hams are of great celebrity.

Wheat, rye, Indian corn, buckwheat, potatoes, oats, and barley, are staple commodities. Emigrants from the vine countries of Europe have pointed out some districts as very suitable to the cultivation of the grapes used for the making of wine; and it is believed that the situation of the state furnishes peculiar advantages for the rearing of silk-worms and the making of silk. Manufactures are flourishing and improving. Glass of various kinds, and in large quantities, is made at thirteen different establishments, in the counties of Warren, Cumberland, and Gloucester. Paper is extensively manufactured in Springfield, at Morristown, near Trenton, and at Mount Holly. Gunpowder is made near Spottswood. Iron is probably the most important article of manufacture. Bog ore is found in Burlington and Monmouth; and the mines of the northern counties are rich, and, perhaps, inexhaustible. Forges and furnaces are in active operation in Morris, Sussex, Monmouth, Gloucester, and Cumberland counties. There are rolling and slitting-mills at Paterson, Bridgeton, and Dover. At the latter place chain-cables are made, and at both the former, cut-nails in abundance. The towns most engaged in manufactures are Newark and Paterson. The former is noted for the manufacture of leather, and the exercise of various occupations in which it is employed; also for the making of carriages, cabinet ware, and fancy chairs. The latter is chiefly engaged in the manufacture of cotton, hemp, and machinery. In 1829, there were in Paterson 487 power and hand looms in operation, and four machine factories, in one of which was made, in the preceding year, 15,048 spindles, with their appurtenances; and connected with it is an iron and brass foundery, producing, annually, 35,000 pounds of brass, and 1,020,000 pounds of iron castings. The number of persons employed in the various establishments, many of whom were children, was 1879. The cotton and flax annually consumed amount to 2,779,600 pounds; and the quantity of duck, and cloth of all descriptions, manufactured, 2,604,450 yards.—This state is rich in mineral productions. Limestone extensively prevails. Iron, as already mentioned, is abundant. Marble and zinc are found. Ores of gold and silver have been discovered in the county of Warren, and the former recently near Somerville. Copper mines in Somerset and Bergen counties were wrought before the revolution, and extensive veins are believed to cross the state in a south-westerly direction from Schuyler mine, near Belleville, to the river Delaware. Marl, peculiarly fitted as a manure for the sandy regions, is found in their vicinage. Peat exists in different districts in exhaustless beds. Clay of superior quality for the arts is dug up in great abundance near South Amboy; and sand, used as an ingredient for the finest glass, is carried from beds recently discovered near Port Elizabeth, in the county of Cumberland, to the principal manufactories of the Union. The chief towns are Trenton, Newark, Paterson, Hackensack, Morristown, Newton, Belvidere, Elizabethtown, New Brunswick, Perth Amboy, Princeton, Somerville, Burlington, Mount Holly, Woodbury, Salem, and Bridgeton. The seat of the state government is at Trenton, in which is a state house, a large and convenient but plain building, for the accommodation of the legislature and the superior courts; and near the town stands the penitentiary or state prison, where about 130 convicts are imprisoned, at hard labour.

NEW JERSEY COLLEGE. See *Princeton.*

NEWMARKET; a town in England, partly in Cambridgeshire, but mostly in Norfolk; thirteen miles north-east of Cambridge, sixty north of London. It is chiefly celebrated for horse-races, being the first meeting in the kingdom. The town owes its support principally to the races, which are held chiefly in the spring, and the months of July and October. It has two markets weekly, on Tuesday and Thursday.

NEW MEXICO; a territory belonging to the Mexican United States. See *Mexico.*

NEW NETHERLANDS. See *New York.*

NEW ORLEANS; a city of Louisiana, situated in the parish of Orleans, in a bend of the Mississippi river, on its left bank, 105 miles by the river, and ninety in a direct line from the Balize, at its mouth; lat. 29° 57′ N.; lon. 90° 7′ W. It is 1203 miles from Washington, about 1000 below the mouth of the Ohio, about 1200 below the mouth of the Missouri, and nearly intermediate between Boston and Mexico; population in 1810, 17,242; in 1820, 27,176; in 1830, 46,310. New Orleans is the seat of government for the state, and is the grand commercial metropolis of the Mississippi Valley. No city on the globe possesses so great natural advantages for a commercial capital. The Mississippi, and its tributaries above the city, have an extent of more than 20,000 miles of waters, already navigated by steam-boats, and passing through the richest soils and the pleasantest climates. Its communication with the ocean is easy. Numerous bayous connect it with every part of the state. By a basin and canal, and the bayou St John, it communicates with lake Ponchartrain, and the lakes thence to the gulf of Mexico, the opposite Florida shore, with Mobile, Pensacola, and the whole gulf shore, east and west. A rail-road between the city and lake Ponchartrain, four and a half miles long, perfectly straight, with only sixteen inches ascent and descent, is now opened; and an artificial harbour and breakwater in the lake, at the end of the rail-road, will soon be completed. The Mississippi and its principal branches are admirably adapted for steam-boat navigation, and also for the descent of those cheap and capacious vessels, the flat-bottomed boats. The use of steam-boats in towing ships now renders it unnecessary to wait, either at the city or below it, for favourable winds. The forts erected for the defence of the city, during the last war, have been improved, and others have been erected; and the constantly increasing strength of the city itself, and its facilities for receiving the growing strength of the whole Mississippi Valley, must render it secure from foreign invasion. This is but a very brief and imperfect view of the local advantages of New Orleans. The old city, properly so called, is built in the form of a parallelogram, of which the longer sides are 1320 yards, and the shorter, or the depth of the city towards the swamp, 700 yards. Above the city are now built the suburbs of St Mary and Annunciation. Below the city are the suburbs Marigny, Daumois, Declouet. These are called *fauxbourgs.* Between the city and the bayou St John are the villages St Claude and St Johnsburg. The old city is divided into squares, having a front of 319 feet in length; and each square is divided into twelve lots. Few of the streets are more than forty feet wide. The wooden buildings, of which the city was formerly composed, have mostly given place to those of brick. In the old city, the French and Spanish styles of building predominate. The houses are stuccoed externally, and this stucco, of a white or yellow colour, though less durable, is more pleasing to the eye than brick. The fauxbourg St Mary, and other new parts of the city, are built principally of brick, after the American style. Several warehouses, with stone fronts, have lately been erected. In general, it may be said that the city is gradually becoming more purely American in all its characteristics; but a great portion of its inhabitants are of French and Spanish descent, and the French language is used more than the English. During the season of most active business, the manners, dress, customs, and languages of the world at large seem to be here exhibited. Those who desire to witness a display of the commodities of all climates, and all countries, with the costumes and languages of civilized and uncivilized men and women, may do well to visit the market of New Orleans, especially on a Sunday morning in February or March. We have not room, without too much extending this article, to describe the public buildings of this city. In general, they are commodious, elegant, and very expensive. There are few churches, and Sunday is spent more after the custom of Catholic countries than in any of the Atlantic cities. The Catholic cathedral is a noble edifice, ninety feet by 120, with four towers. The roof is covered with hollow tiles, as are most of the French and Spanish houses. The charitable institutions of the city are highly creditable; they are very efficient in alleviating the wants, miseries, and vices of the native and the stranger. The means of education in New Orleans are very limited, compared with those of the other large cities in the United States; but there have been great improvements within the last three years. The police of the city has become very efficient, and scenes of riot and disorder are rarely known. Considering that one half of the people are slaves, and that so great a variety of strangers habitually throng this city, there is more order and good morals than could be expected. The following table will present a view of the commerce of New Orleans.

Imports into New Orleans from the Interior during Six Years.

ARTICLES.	1824.	1825.	1826.	1827.	1828.	1829.
Bacon, assorted, *hhds.*	349	1,210	470	1,533	3,097	2,868
Bagging, *pieces* . .	4,562	6,191	5,299	2,795	5,972	13,472
Butter, *kegs*, . .	1,868	2,130	2,926	4,561	3,860	3,995
Beef, *barrels*, . . .	732	1,242	1,203	1,792	5,622	5,405
Beeswax, *do.* . .	295	503	560	603	770	795
Buffalo robes, *lbs.* .	12,609	18,411	7,740	13,412	19,987	15,210
Cotton, *bales*, . .	142,575	206,993	251,983	337,934	298,042	269,571
Stock, *do.*	1,501	3,737	3,030	11,171	4,365	5,557
Corn meal, *barrels*, .	4,727	3,420	729	1,827	498	6,849
Corn in ears, *do.* . .	57,351	72,563	143,373	79,973	89,876	91,882
Flour, *do.* .	100,929	140,546	129,094	131,096	152,593	157,323
Lard, *kegs*, ...	18,210	34,373	51,053	85,865	115,535	110,206
Pig lead, *pigs*, . .	45,454	58,479	86,242	106,405	183,712	146,203
Linseed oil, *barrels*, .	191	622	708	1,723	2,637	2,940
Deer skins, *packs*, .	3,863	4,820	11,693	4,169	3,160	6,215
Bear skins, *do.* . .	168	396	161	253	155	159
Tobacco, *hhds.* . .	2,573	18,409	19,385	21,704	30,224	29,432
Stock, *do* . . .	647	1,332	1,862	6,442	648	4,239

The amount of cotton exported in the year ending September 30, 1830, was 354,024 bales. Many hundreds of flat boats are seen, at the levee, in the busy season, laden with all the productions of the Valley. Steam-boats are coming and departing every hour, and fifty or sixty are often seen in the harbour at one time. A forest of masts is continually seen along the levee, except during the sultry months. Nothing seems adverse to the growth of New Orleans, except the unhealthiness of its climate. The surface of the city is several feet below the level of the river at high water, and the adjacent country is all low and marshy. This is, doubtless, the principal cause of the frequent occurrence of the yellow fever. The legislature have taken active measures to have the country well explored, and are commencing a great variety of works for draining, raising, and otherwise improving it. The streets of the city are now paved, and places of stagnant water are drained, or filled. Water from the river is now made to wash the gutters of the streets. These and other means are expected to improve the healthiness of the place. If it should be made healthy, it will probably become the largest city of America. For further statistical information, see *Louisiana*.

NEW PLATONISTS; a philosophical sect. The sect of Platonists (see *Plato*) was, of all the sects belonging to the Socratic school, the most numerous; but their zeal relaxed, whilst others, particularly the sceptics, began to excite greater interest. In the third century of the vulgar era, however, the Platonists rose anew, and formed a distinct sect—that of New Platonists, also called the *Alexandrian Platonists*, because their chief seat was at first in Alexandria. Their doctrines had a tendency to unite Platonism with Orientalism. The new impulse which the Platonic philosophy, in a new form, suddenly received, is to be explained by the peculiar genius of the first New Platonists; their opposition to scepticism; the inclination of the Greeks, enervated by luxury, to mysticism and Oriental fanaticism; and a desire to oppose to the victorious progress of Christianity a philosophical system of paganism. The New Platonists aimed at the highest knowledge,—the knowledge of the *absolute*, and an intimate union with it, in order to fulfil the destiny of man, to attain a perfect acquaintance with the universe, holiness, and happiness, to which, as they maintained, the knowledge of the *absolute* (θεωρια) would alone lead. Ammonius Saccas of Alexandria (a man of extraordinary genius, who was obliged to earn his bread by carrying loads, and who, according to the common opinion, was the founder of this school) inspired his pupils, among whom were the famous critic Longinus (q. v.), Plotinus, Origen, and Herennius, with his own poetico-philosophical zeal. Plotinus (born at Lycopolis, in Egypt, A. D. 205, and died 270) contributed chiefly to settle the doctrines of New Platonism, in his writings. Philosophy, according to him, should know the One which is the cause and essence of all things, the original light from which every thing emanates, not by thought and reflection, but, in a perfect manner, by intuition, which precedes thought. The philosophy of Plotinus, therefore, rests upon the proposition that the absolute, that which is above the senses, is the foundation of the world; and that it is knowable by intuition, which precedes thought. Intelligence, the product and image of the One, penetrates all things; and the soul proceeds from it, as the forming thought; the soul again seeks the One, the Good, the original cause of the universe. This is done by immediate intuition and enjoyment; and thus, according to him, the conceiving and the conceiver become one; the conceiving soul becomes what it conceives; it returns to the One. The whole spiritual world is therefore to be considered as one spiritual being. All is only an intuition. The sensible world is but the image of the intelligible world; time is an image of eternity, and emanates from it. Evil is either only apparent, or necessary; but if necessary, it ceases to be evil. Among the pupils of Plotinus, Porphyry (Malchus), and Amelius are distinguished. Jamblichus, a pupil of Porphyry, had a large number of disciples, among whom Eustathius, Ædesius, and the emperor Julian, were the most celebrated. At a later period, Athens became the seat of New Platonism. Among the later New Platonists, Proclus of Constantinople (from 412 to 485) is distinguished. Two circumstances chiefly render the New Platonists interesting: first, that poetical elevation of the soul which is most welcome when the student has passed through all the dogmatic systems and scepticism, without finding satisfaction; and, secondly, the reconciliation which their system attempts between the Greek philosophy, on one side, and the most ancient symbolical system of the East, paganism in general, on the other. Hence, also, the union of Platonism and the Pythagorean philosophy, and the desire of uniting the contending views of former sects. This attempt, however, to conceive the popular religion, or paganism in its original sense, has led some to reject those accounts which they cite to prove their opinions; and it has been asserted that they, themselves living at so late a period, cannot be testimonies to facts partly buried in the obscurity of remote history. But, on the other hand, it has been asserted that many of these antiquarian and mythological notices, which we find first or only with the New Platonists, bear too much the stamp of truth to be considered as invented by them, and that they might have been taken from earlier sources. The scholastic philosophy and dialectic subtlety of the middle ages, which were addressed solely to the understanding, and the want of a philosophy which should satisfy the whole nature of man, caused, towards the end of the fifteenth century, the renewal of Platonism, as modified by the New Platonists. The most distinguished supporter of this new Italian Platonic philosophy, patronised by the Medici, in Florence, was Marsilius Ficinus, who died in 1499.

NEW PROVIDENCE. See *Providence*.

NEW SOUTH WALES; an English colony, on the eastern coast of New Holland. (See *Holland, New*.) Cook landed here (1770) on his first voyage, took possession of the country in the name of his sovereign, and called it *New South Wales*. He also gave its name to Botany bay, which he entered at the same time. The favourable report which he made of the harbour and the neighbouring country, determined the British government to found a colony there (1778), which was soon after removed to Sydney, in Port Jackson, and which, although composed, in a great measure, of convicts, soon became very prosperous. In 1803, a settlement was established on Van Diemen's Land. (See *Diemen's* (*Van*) *Land*.) In 1813, the Blue mountains were passed, and, in 1815, the site of the town of Bathurst (140 miles west of Sydney) was selected. In 1829, exploring parties had penetrated to a distance of 600 miles into the interior. On the eastern coast, colonization has extended to Moreton bay, 450 miles north of Sydney, and to Port Western, at an equal distance south. Swan river (q. v.) settlement was established on the western coast of New Holland in 1829. By a proclamation of the governor, in 1829, the limits within which it was permitted to settle, comprised 34,000 square miles, and included nineteen counties. The census of that year gave a population of 36,548 souls. The number of acres located was 2,906,000; cleared, 231,573; cultivated, 71,523: horses, 12,479; horned cattle, 262,868; sheep, 536,391, The staple of the colony is wool, of which, in 1822, 172,880 pounds were exported: in 1829, the export had increased to 1,006,000 pounds. The total value of exports in 1829 was £184,720; of imports, £678,063. The inhabitants consist of the officers of the colony, who are landed proprietors, and have some of the convicts as servants; of voluntary emigrants, generally poor persons, transported free of expense, to whom land, &c., is given; of convicts who have become free; and of convicts still under the operation of their sentence. Bushrangers are convicts who escape to the woods, and live by depredations on the colonists. The colonists have lately turned their attention less exclusively to pasturage, and more to agriculture; corn, potatoes, tobacco, hemp, flax, and all kinds of tropical fruits, are cultivated. The climate is mild and healthy; the winter is rainy; it begins in March, and continues till August; there is no snow except on the highest mountains. The colony, although it promises to be of great importance to the mother country, has thus far been a burden. The revenue, in 1828, was £102,577; the expenditure, £287,954. The commercial connexions are principally with Britain, Cape of Good Hope, China, Mauritius, Van Diemen's Land, and New Zealand. The moral condition of the colonists is low: schools, however, have been instituted, and are producing good effects; and, in 1829, a college was founded at Sydney. Several newspapers, and three or four quarterly periodicals, are published. The government is under a governor-general, and a legislative council (created in 1829); justice is administered by civil, criminal, and admiralty courts. For further information, see Cunningham's *New South Wales* (London, 1827), and the *Asiatic Journal or Monthly Register for India, China, and Australia*.

NEW SPAIN. See *Mexico*.

NEWSPAPERS. One of the most remarkable phenomena of modern times is the periodical press, vitally affecting society in all its relations, and forming one of the political elements of modern free nations, which the ancients had not even in embryo. They make the course of the statesman very different, and, with most nations, much more difficult, in the present than in former times, so that our days have witnessed not merely the shipwreck of a ministry on these dangerous breakers, but that of a whole dynasty. Of the periodicals, the newspapers form the most powerful political engine; and of them we shall treat chiefly in this article, leaving a few more remarks for the head *Periodical*. Reviews, and the like, may contribute more to enlighten the public mind on certain important questions; but the wide diffusion of newspapers, their rapid communication of intelligence on subjects of immediate interest, and the means which they afford of acting on the public mind in its state of highest excitement, make them much more powerful as political engines. Newspapers have changed all the relations of government by their unceasing activity. So important an agent of modern society offers a vast field for remark. We might treat of their effects, and of what is, and what ought to be, their character; also of the great difficulty which future historians will find in distinguishing, in many cases, the true from the false in the great mass of conflicting statements which these records of the time present—a difficulty not less than that which arises from the scantiness of materials in respect to many parts of ancient history; but we fear that even a mere historical treatment of the subject will carry us beyond our proper limits.

The origin of newspapers, like that of many institutions important to modern civilization, is to be referred to Italy. The war which the republic of Venice waged against Solyman II., in Dalmatia, gave rise, in 1563, to the custom in Venice of communicating the military and commercial information received, by written sheets (*notizie scritte*), to be read at a particular place by those desirous to learn the news, who paid for this privilege in a coin, not any longer in use, called *gazetta*—a name which, by degrees, was transferred to the newspaper itself in Italy and France, and passed over into England.* A file of these Venetian papers, for sixty years, is still preserved in the Magliabecchi library at Florence. The first regular paper was a monthly, written, government paper at Venice; and Chalmers, in his life of Ruddiman, informs us that "a jealous government did not allow a *printed* newspaper; and the Venetian *Gazetta* continued long after the invention of printing, to the close of the sixteenth century, and even to our own days, to be distributed in *manu-*

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* Some etymologists have thought the name *gazetta* is to be derived from *gazzera*, a magpie, or, in this case, a chatterer; others from the Latin *gaza*, which, being colloquially lengthened into *gazetta*, would signify a little treasury of news. The Spanish derive it, indeed, from the Latin *gaza* (Greek, γάζα), though their newspapers, least of all, deserve the name of treasure. They have a peculiar word, wanting in our idiom, *gazetista*, a lover of the gazette. The German *Zeitung* is from the ancient *theidinge*, or *theidung* (the English *tiding*, the Swedish *Tidingar*).

script." Those who first wrote newspapers were called, by the Italians, *menanti*, because, says Vossius, they intended, commonly, by these loose papers, to spread about defamatory reflections, and were therefore prohibited in Italy, by Gregory XIII., in a particular bull, under the name of *Menantes* (from the Latin *minantes*, threatening). Menage derives the name, with more probability, from the Italian *menare*, which signifies "to lead at large," or "spread afar." Perhaps it will not be irrelevant, however, for the writer to remark that it is common for the Mecklenburg peasantry, as he knows from experience, to call the newspaper *de Logenblad* (the lying paper); and the German proverb, in use to this day, "He lies like print (*er lugt wie gedruckt*)," is probably connected with this view of early newspapers. The first English genuine newspaper appeared under Elizabeth, in the epoch of the Spanish armada, of which several, printed when the Spanish fleet was in the English channel, during the year 1588, are preserved in the British museum; and it is very curious how much the mode of communicating certain kinds of intelligence in these early papers resembles the forms in use at present. The earliest newspaper is entitled The English Mercurie, which, by *authority*, was "imprinted at London, by her highnesses printer, 1588." These were, however, but extraordinary gazettes, not regularly published. Periodical papers seem first to have been more generally used by the English during the civil wars of the time of the commonwealth, to disseminate sentiments of loyalty or resistance. They were called *weekly newsbooks.* Though *Mercury* was the prevailing title of most, the quaintness which marks the titles of books in that age is found also in the names of the "newsbooks;" for instance, the *Secret Owl*, *Heraclitus Ridens*, the *Weekly Discoverer*, and the *Discoverer stript Naked*, &c. A catalogue of the Mercuries would exhibit a curious picture of those singular times. For more particulars respecting the further development of newspapers in the troubled and changeable times which followed the period of the commonwealth, we refer the reader to D'Israeli's interesting *Curiosities of Literature*, division *Origin of Newspapers*, in vol. i.; also to Johnson's *Lives of the English Poets* (Addison). For laws enacted respecting newspapers, under Pitt, and subsequently, as well as for a general view of the moral and political influence of the English periodical press, we refer the reader to the *Periodical Press of Great Britain and Ireland* (London, 1824); also to *Babylon the Great* (London, 1825, 2d vol.); and to the abstracts of acts of parliament, given, among other works, in the Annual Companion to the British Almanac.

In Germany, newspapers originated with the *relations*, as they were termed, which sprung up at Augsburg and Vienna in 1524, at Ratisbon in 1528, at Dillengen in 1569, at Nuremberg in 1571, where they originally appeared in the form of a letter, and printed, but without the place of printing, and without number. The first German newspaper, in numbered sheets, was printed in 1612, and was called "Account of what has happened in Germany and Italy, Spain and France, the East and West Indies, &c." Since that time, public papers have successively appeared in various places, under the titles *Relation*, *Ristretto*, *Correspondent*, *Courier*, *Chronick*, *Realzeitung*, &c., which were placed by the governments under censorship.

Thus it appears that the desire to receive news from the theatres of war, and from foreign countries, gave birth to regular newspapers in England and Germany; but the case was different in France. De Saint Foix, in his curious *Essai historique sur Paris*, says that Renaudot, a physician at Paris, to amuse his patients, was a great collector of news, and thus much increased his practice. As the seasons were not always sickly, he considered that he might turn his treasures to better account, by giving every week to his patients some fugitive sheets, which should contain the news of various countries. He obtained a privilege for this in 1632. The French, at the beginning of the revolution, imitated the English newspapers; but, as their passions became more and more heated, there arose papers like Marat's *Ami du Peuple*, and Hebert's *Père Duchesne*, which, at present, we can hardly conceive of as having really existed. A history of the French press during the revolution would be exceedingly interesting. Napoleon made great use of the *Moniteur* as an official organ for furthering and making known his projects. (See the article *Moniteur*.) After the restoration, it declined in interest and popularity, since the royal government, to operate on the public opinion, often made use, in preference, of the semi-official papers, which were frequently under the influence of one minister or another; but, long before that event, owing both to its high price (100 francs a year), and to its necessary partiality, it was by no means the most read of the Paris journals. The *Journal de Paris* appeared first in 1777, and remained in existence during and after the revolution, but was several times obliged to change its political character. During the ministry of Decazes (1818—20), it was under the influence of this minister. It terminated, in June, 1827, its vacillating and equivocal career. The *Gazette de France* was the first regular French gazette that appeared. It was established by Renaudot in 1631. Up to 1792, it forms a series of 163 volumes. With a few interruptions, it also continued during the revolution; and, after the second restoration, it belonged, with the *Quotidienne*, the *Drapeau blanc*, &c., to the papers of the ultra party. The French gazettes are undertaken in shares; and, as these shares can be sold, it is easy to understand how the gazettes can be bought by the ministry. Each minister made use, without hesitation, of his own journal: thus M. de Damas, minister of foreign affairs, took the *Drapeau*, and M. de Corbière, minister of the interior, the *Gazette*. This paper was discontinued in June, 1827; but, in July, 1827, the *Etoile*, an evening paper, assumed the name of *Gazette de France*, and became the organ of Villèle, whom it continued to defend after his fall, and assailed the succeeding ministry with the most bitter vehemence. It became the most violent defender of absolute monarchy, and, under Polignac, constantly demanded a *coup-d'état*. At present, it defends the cause of legitimacy and Charles X. The *Etoile* formerly belonged to M. de Peyronnet, the minister of justice, and to the Congregation. It received 20,000 francs from the treasury, for publishing the articles of M. de Villèle. It was, moreover, the advocate of Jesuitism. The *Quotidienne* has belonged to M. Michaud, the historian of the crusades, to M. de Vitrolles, &c. It was a violent supporter of absolutism and the clergy. It is said that the royal papers cost the government, before the last revolution, 5,000,000 of francs. In the early times of the revolution, the most distinguished anti-revolutionary papers were the *Actes des Apôtres* (conducted by Peltier), and the *Ami du Roi;* and the most distinguished advocates of the revolution were the *Chronique de Paris* (by Condorcet, Noel, &c.), *L'Orateur du Peuple* (by Fréron), the *Journal de la Cour et de la Ville* (begun by M. Brun, afterwards marshal), and many others. The rapid succession of revolutions had a great influence on the appearance and disappearance of the Paris gazettes. For a long time, the *Journal du Soir* maintained itself undisturbed, and uninterrupted by any revolution. By its tone, simple, intellectual, and free from the shackles of party, it rode through all the perils of revolutions; and it became a kind of proverb, that, not to be guillotined, shot, or transported, it was necessary to know how to tell the truth like the *Journal du Soir*. The directory made use particularly of the *Redacteur* to make known its policy to France and the world. One of the most important Paris gazettes, which began in 1791, and has been continued till the present day, is the *Journal des Débats* (1804—14, and, in March, 1815, called the *Journal de l'Empire*). For a time, Chateaubriand used to write for it against Polignac. At present, it is the paper of the *juste milieu*, and M. Kératry, who fought, in July, 1830, on the side of the people, is one of its editors. With it the editor united, in 1800, a *Feuilleton*, comprising the *débats littéraires* (literary discussions). This part of the journal was superintended by distinguished men, such as Fiévée, till 1807, who was followed by Etienne. In the abbé Geoffroy, especially, it had, for thirteen years, a contributor, by whom it was rendered so popular, that 30,000 copies are said to have been sold. Since this time, the Paris gazettes have not contented themselves with mere political news, but have all given literary and theatrical notices. For both Geoffroy manifested an extraordinary talent, and, in this *Feuilleton*, he daily presented interesting essays, equally distinguished for knowledge and wit, and for sharp satire and humour. Since Geoffroy's death, the sale has diminished. The best contributors were, subsequently, Malte Brun, Hoffman, and Duricquet, in the dramatic department. For a time, it was a ministerial paper, in which Villèle and Chateaubriand communicated their views. When Chateaubriand left the ministry, he made the *Journal des Débats* an opposition paper.

Under Napoleon, the press in France, as in all Europe, with the exception of England, was in a low state, and, in all that concerned politics, only the echo of what the *Moniteur* promulgated, a paper in which the French emperor not unfrequently caused paragraphs to be inserted, written by his own hand. After his return from Elba, he restored the freedom of the press; but it was cautiously used. After the restoration, the gazettes were subjected to the censorship, which did not cease till 1819. Various enactments were, however, made, which rendered the establishment of a daily journal very difficult: several new gazettes, nevertheless, appeared. But, notwithstanding these competitors, the most popular Paris journal continued to be *Le Constitutionnel* (q. v.), which was founded in 1815, by fifteen shareholders. In its sentiments, it was constitutional, but in its language, moderate. It was conducted by Etienne, Jay, and Tissot. Twenty thousand copies were said to have been sometimes sold. At first, a share was worth 3000 francs: afterwards, 100,000. The *Courrier Français*, formerly conducted by Kératry, was much more liberal, but had a less sale, and the editor was frequently summoned before the criminal court. The *Journal du Commerce* belongs almost solely to Paris merchants. It frequently treats financial questions with great knowledge of the matter. From it we generally gather Laffitte's opinions.

In the history of the French press, the *tendency suits*, as they are styled, are deserving of mention. On the entire emancipation of the press, in 1819, the spirit of political party was so fomented, and gave rise to such excitements, that the government, together with two other laws of exception, which they laid before the chambers, after the murder of the duke of Berry, proposed anew to subject the journals to the censorship—a proposal which met with violent opposition from all parties, but was, nevertheless, passed in the chamber of deputies, March 30, 1820. This law of exception was prolonged in the session of 1820, so as to embrace the period of the session of 1821, but was afterwards repealed, and supplied by the supervision of the police, because the censorship was found incompatible with a representative constitution. On the other hand, the new laws against the abuses of the press were drawn up in stricter terms. Both the proprietors and editors were made responsible, and libels were punished by fine and imprisonment: even the intention, the secret purpose of a suspicious article, could be made punishable, if its tendency appeared dangerous. The proprietors were compelled to give securities for the good behaviour of gazettes and periodical papers, in sums of 750—10,000 francs rents. For Paris, a security of 10,000 francs rents was necessary, calculating, therefore, according to the then rate of interest, a capital of 150,000 francs. Villèle finally succeeded in restoring the censorship; but, when he convened the chamber of representatives in 1827, the censorship was obliged to cease. After Villèle's downfall, a milder law of the press was submitted, in 1828, by the new ministry to the chambers, and accepted. (For the attack on the press by Polignac, see *France*.) A French paper (*Le Compilateur*), in an article written in 1829, and speaking of things as they then stood, says, "There are in Paris 152 journals, literary, scientific, and religious, and seventeen political,—in all 169. Of these papers, 151 are constitutional, or, as they are called, *liberal*, the eighteen others being more monarchical in their spirit. The 151 constitutional journals have, it is stated, 197,000 subscribers, 1,500,000 readers, and produce an income of 1,155.200 francs: the eighteen others have 21,000 subscribers, 192,000 readers, with an income of 437,000 francs. *Le Moniteur*, the official paper, has from 2500 to 4000 subscribers, principally public functionaries; *Le Constitutionnel*, 18,000 to 20,000 subscribers; *Journal des Débats*, 13,000 to 14,000 subscribers; *Quotidienne*, 5000 subscribers; *Courrier Français*, 4500 subscribers; *Journal du Commerce*, 3500 subscribers; *Gazette de France*, 7000 subscribers; *Messager des Chambres*, which, since the accession of the Polignac ministry, seems to have taken up liberal ideas, has 2500 subscribers; *Tribune des Départemens*, a new paper, 100 subscribers; *Nouveau Journal de Paris*, 1000 to 1500 subscribers. These are all published in the capital: those printed in the provinces are calculated at seventy-five journals, exclusive of papers for advertisements, and ministerial bulletins. Of these, sixty-six are constitutional, supported only by their subscribers of the same way of thinking. One (the *Mémorial de Toulouse*) is supported by the archbishop of that diocese; four are, it is asserted, paid from the secret funds of the Jesuits: the other four are described as monarchical, but of little influence." So far the *Compilateur*. In 1812, there appeared forty-five journals in Paris; in 1826, 179; in 1829, their number was 309; hence more than six times as many as in 1812, and two-fifths more than in 1826. Among those branches for which there were, in 1812, no journals, commerce had, in 1829, fifteen journals, the Catholic worship twelve, morals and philosophy six, Protestantism three, gardening three, the marine two, magnetism two, free-masonry one; manufactures (which had, in 1812, but one) and political economy (which had none) had, in 1829, seven. Even gambling and lotteries had acquired three organs. The literary gazettes had increased in that year from five to sixty-one; the political, from five to thirty-two; the advertising papers, from one to twenty-seven; the medical, from five to twenty-eight; periodical publications for education, from two to fourteen; journals for general literature, from three to twelve; the journals which relate to public institutions, and the administration, from one to ten; the law papers, from ten to eighteen, &c. No branch whatever had fewer papers than in 1812: one branch only had retained the same number,—bibliography, which had one. If we compare, however, the two years, in respect to the frequency of publication, the increase appears still greater. While, in 1812, twenty-eight monthly papers, and, in 1827, 107 monthly (therefore not quite four times as many), appeared in Paris, the number of daily papers, in 1829, was six times greater than in 1812 (5 : 30); moreover, there appeared forty-seven journals twice a week, while, in 1812, no paper of that sort was issued: in 1829, there were forty-five weekly publications, while, in 1812, there were but two. It must also be mentioned, that almost all the papers were printed, in 1829, on larger sheets, and the periodicals in thicker volumes: in short, we believe it would be correct to say that the above proportion of forty-five to 309 expresses but half of the actual increase. In the departments, the periodicals of 1812, 146 in number, had increased, in 1829, to 398. In 1812, there were sixty-four political papers; in 1829, eighty-one: of scientific papers, and those for the fine arts, in 1822, only thirteen; in 1829, fifty-one: for literature, in 1812, one; in 1829, sixty: advertising papers, in 1812, sixty-eight; in 1829, 206. Nine departments which, in 1812, had no papers at all, had, in 1829, several. Almost all have more than in 1812, and very few, as Haute-Vienne, have a smaller number. Only in one province four whole departments had taken no part in this general advancement, and this province is the very one which M. Dupin has marked so black on his map of political economy,—Bretagne. In Paris, then, the increase had been six-fold, in the departments three-fold. One of the chief causes of this difference was that, in Paris, where so many printers reside, some independent ones were always found who would undertake liberal publications, while, in the departments, the influence of the prefect, bishop, &c., was too great. Another cause was the immense centralization in Paris, effected by the revolution and Napoleon. If France ever receives the municipal administration for which she has sighed so long, the departments will immediately appear more independent of Paris. We cannot give a statement of the French papers since the revolution of 1830. New papers have been started, as the *Révolution;* old ones have ceased; several have changed their colour.

As regards the French journals devoted to literature, amusement, and general discussion, we may observe that the *Mercure de France* was, for more than a century, the only weekly journal of this character. The whole series (1672—1813) consists of 1657 volumes in 12mo, and 110 volumes in 8vo. It is still kept up, but has little popularity. In 1818 and 1819, the ultra-liberal *Minerve Française* made a great noise by its political pieces. The chief contributors were Etienne, Jay, Jouy, Tissot, and Benj. Constant. The circulation was computed at 15,000 copies, and the net profit to each of the seven proprietors was 30,000—40,000 francs a year. After the restrictions of the freedom of the press, it was discontinued in March, 1820. The *Tablettes Universelles*, edited weekly, since 1823, by Coste, has contained some very able essays on general politics and literature, and maintained with success the character of a legitimate opposition. But, in 1824, these *Tablettes* took the tone of the ministry, who had succeeded in purchasing of M. Coste the property of the journal for a very high sum (180,000 francs). The most valuable, and, in some measure, the leading paper in philosophy and literature, is the Globe of Paris, in which professor Cousin has taken a part. It has contributed to make the French more liberal in their views of foreign literature. In Italy there are similar periodicals; thus the *Giornale Arcadico di Roma* embraces literature, fine arts, and miscellaneous subjects. In Milan, since 1828, has appeared the Echo (*Eco*) which endeavours to keep up a literary intercourse between Italy and other countries. In the Netherlands, Sweden, Denmark, &c., there are similar journals, which we have not space to enumerate.

Italy, Spain (till the revolution of March 7, 1820), and Portugal, present little worthy of notice, as respects the periodical press. During the occupation of these countries by the French, it was, indeed, more developed than before; but Napoleon left it no freedom. At present, from causes easily understood, it has fallen still lower in these countries. The *Restaurador*, in Madrid, has been devoted, since the restoration, in 1823, to the political system of the clergy, and the *Gaceta*, of Madrid, has a semi-official character. Of the Italian gazettes, the *Gazette di Firenze*, the *Gazetta di Milano*, and the *Diario di Roma*, are the only ones that are read in foreign countries.

In the Netherlands, there were, in 1829, newspapers in the Dutch and French languages. Several of the latter, and, above all, the *Vrai Libéral*, in Brussels, have been among the most fearless journals of Europe, on which account the editors have been constantly at variance with the tribunals. The press in the Netherlands has been, indeed, free, but the law of libel so much the more rigorous, and not unfrequently enforced with great severity, especially since the law of 1815; but, in 1829, the project of a milder law respecting the press was submitted to the chambers. For a long series of years, the (French) *Gazette de Leyde* enjoyed a great reputation, and was regarded as the *gazette diplomatique* of Europe. It was the property of the Luzac family in Leyden, by whom it was edited for several generations, with the greatest care, and in the purest French style. Of the gazettes published in Dutch (called *courants*), the Haarlem gazette is the most popular, and has the most extensive sale. In almost every Dutch town, there is published such a courant, filled, for the most part, with articles of intelligence; and in all of them the singular custom has been introduced of printing them with lines running lengthwise on the margin. In the year 1828, the *Niewsen-advertentie-blad*, the *Gazette des Pays Bas*, the *Industriel*, with some others, were the most important political papers. In 1826, there appeared, in the Dutch language, eighty daily and weekly papers, and thirty-five monthlies.

In Switzerland, there appeared, in 1824, eleven political papers, seven of which were German, two French, and two Italian. A later account of Switzerland states, that twenty-four newspapers appear each week, edited nine by Catholics, fifteen by Protestants, not including five papers appearing once a week or fortnight, nor merely scientific periodicals. (See *La Chronique Suisse* of 1830.) In Sweden, there is not much opposition or independence among the papers. See *Swedish Language and Literature*.

The *Statistique et Itinéraire de la Russie*, by J. H. Schnitzeler (Paris and St Petersburg, 1829), informs us that, in 1829, seventy-three papers and periodicals were published in the empire. The first paper was published in 1703, under Peter I. The *Severnaïa Ptchela* (Bee of the North) seems to have most subscribers. It appears at Petersburg three times a week. Several papers are published in foreign languages; for instance, the *Gazette de St Petersbourg*, and the *Journal de St Petersbourg*. We refer, for more information, to the above mentioned work, page 106 et seq.

The Greeks have had, since 1821, political journals in their language: Maxime Raybaud also published in Patras, a weekly paper, the *Courrier d'Orient.*

In Smyrna, the place of the *Spectateur Oriental* was taken, in 1827, by the *Observateur Impartial* (friendly to the Turks), and subsequently by the *Courrier de Smyrne.* Even Tripoli (in Barbary) has had, since July 31, 1827, a political and literary French monthly—*L'Investigateur Africain.* The following is copied from Rufus Anderson's Observations upon the Peloponnesus and Greek Islands, made in 1829 (Boston, 1830). "There are two newspapers now published in liberated Greece, which exert considerable influence, although neither has a numerous subscription. One is in the Greek language, the other in the French. The former, called the *National Journal*, is the organ of government: it is printed twice a week, and costs six Spanish dollars. The latter, entitled the *Oriental Courier*, is issued once a week, and is professedly devoted to politics, commerce, and literature. Three newspapers in the modern Greek language were published in Vienna before the revolution. Among the newspapers which appeared in Greece during the revolutionary struggle, were the following: the Ephemerides of Athens, edited by Mr Psillas; the Friend of the Laws, edited by Mr Chiappa, an Italian, at Hydra; the Greek Chronicle, edited by doctor Meyer, a German, at Missolonghi; and the Greek Telegraph, printed at the same place, under the auspices of lord Byron," &c. We might mention here the French paper *Le Spectateur Oriental*, published at Smyrna.

In Germany, as in France, the periodical press was of little importance till the French Revolution, and, compared with Britain, France, and even the Netherlands, it has always remained so. By the resolutions of the German diet of September 20, 1819, it has again been placed under strict supervision. Till the beginning of the French revolution, the *Hamburger Correspondent* was almost the only gazette in Germany which derived its information respecting foreign countries from original correspondence. The *Neue Zeitung*, in Hamburg, could not eventually sustain a competition with it, and was discontinued. From these and similar sources, articles were copied into hundreds of provincial papers, and this was then called editing a gazette. This explains, in part, the contempt which was connected in Germany with the idea of a newspaper writer, and which, even of late, when this employment has been more worthily pursued, has not entirely disappeared. The sale of the *Hamburger Correspondent* continued to increase from the breaking out of the revolution. At that time, the sale of the *Correspondent* was rated at between 30,000 and 36,000 copies. On the union of Hamburg with the French empire, it received such a blow, that, in a short time, the sale amounted to only a few thousands. In 1828, twenty-one gazettes, daily and weekly sheets, were published at Hamburg. Argumentative papers, in the character of the French and English gazettes, there were, properly speaking, till very lately, none in Germany; but a new kind of periodical sprang up in Germany in 1798, which soon outdid all others—the Universal Gazette. The bookseller Cotta, then in Tubingen, conceived the first idea of it. The *Allgemeine Zeitung* (Universal Gazette) is published at Augsburg. It has correspondents in all the countries of Europe, who supply it with intelligence; the German and foreign governments also frequently make use of it to influence the public by semi-official articles. This has been done with much dexterity by the Austrian government, especially in its transactions in paper money and public stocks; even the French ministry frequently made use, in the period of 1818—20, of the *Allgemeine Zeitung* (though yet more of the London papers). In the appendix there are frequently interesting surveys of the political literature of particular countries. Biographical notices and characters are given of remarkable travellers and the most important public characters of our times. Notwithstanding all these advantages, the sale of the *Allgemeine Zeitung* is, on the whole, small, and merely covers the expenses. In 1817, it amounted to about 2000 copies; at present some estimate it at 5000, others at 1500—2000. Besides this political paper, Cotta has published since 1828, *Das Ausland*, a journal for the knowledge of the intellectual and moral condition of other nations; and, on a similar plan, he has published in Munich, since 1829, *Das Inland.* The latter embraces Germany alone, with particular reference to Bavaria. During the subjugation of Germany by the French, the German papers avoided relating any political news, which had not been inserted in the *Moniteur*, or some one of the semi-official papers of Paris. The emancipation of Germany in 1813, gave rise to a number of political papers in the awakened spirit of the times. Kotzebue and Niebuhr each commenced such a journal, but both were soon discontinued. Among the most celebrated gazettes of this period, the *Rheinische Merkur* of Gorres (q. v.) should be particularly mentioned. January 23, 1814, appeared the first, and January 10, 1816, the last number. In Austria, which, excepting the official gazette of Vienna, had, till then, produced no journal of any political or literary importance, a paper called the *Œstreichische Beobachter.* (Austrian Observer) arose, which was soon regarded as semi-official, and was read with attention throughout Germany, as it was the only one which permitted itself (from 1809—13, to throw, from time to time, a few rays of light on the subject of Spain, and the political situation of the European powers. The proprietor and editor of this paper is Mr von Pilat, the private secretary of prince Metternich. The sale of the paper in the period just mentioned is said to have amounted to 6000 copies. According to the *Hesperus* (1824, Nos. 228, 230, 257 et seq.), the periodical literature of Austria, including the Bohemian, Hungarian, and Italian, is to that of Prussia as 27 to 47. By the decrees of the German diet of September 20, 1819, which were to remain in force for five years, and have since been indefinitely prolonged, all the German gazettes, even in states such as Weimar and Würtemberg, where the censorship was formally abolished by the constitution of the country, were placed anew either under censorship or ministerial supervision. For the literary journals of Germany, we must refer to the article *Periodicals.* The German papers of amusement had their origin with the *Zeitung für die Elegante Welt* (the Gazette for the Polite World), established in Leipsic in 1801. The number of journals of this character has since been constantly increasing, although many have perished with the same rapidity with which they arose. One of the most distinguished is the Stuttgart *Morgenblatt* (21st vol. 1830): we might also mention the Dresden *Abendzeitung*, the Berlin *Gesellschafter*, and the *Literarische Wochenblatt*, established by Kotzebue. Other places have similar papers devoted to the entertainment of cultivated readers. The circulation of these papers, with a few exceptions, does not extend beyond the limits of the country in which they appear. The *Morgenblatt*, many of which go particularly to Austria, has the greatest sale: it is estimated at 1500. The journals in the gazette form, have almost superseded, in Germany, the monthly magazines. There are, among the local and provincial papers, several which, under a liberal censorship, might do much good.

The republic of Colombia had, a short time since, sixteen political papers; the other American states, Paraguay excepted, have likewise periodical journals. In Chile, which received its first printing press from the United States, in 1810, there are now seven gazettes. The British colonies have likewise their journals. At the Cape, the South African Commercial Advertiser, established in 1824, is valuable for its statistics.

No country has so many newspapers as the United States. The following table, arranged for the American Almanac of 1830, is corrected from the Traveller, and contains a statement of the number of newspapers published in the colonies at the commencement of the revolution; and also the number of newspapers and other periodical works, in the United States, in 1810 and 1828.

States.	1775	1810	1828	*States.*	1775	1810	1828
Maine .			29	Georgia .	1	13	18
Massachusetts	7	32	78	Florida . .		1	2
New Hampshire	1	12	17	Alabama .			10
Vermont .		14	21	Mississippi .		4	6
Rhode Island	2	7	14	Louisiana .		10	9
Connecticut	4	11	33	Tennessee .		6	8
New York	4	66	161	Kentucky .		17	23
New Jersey .		8	22	Ohio . .		14	66
Pennsylvania	9	71	185	Indiana. .			17
Delaware .		2	4	Michigan .			2
Maryland .	2	21	37	Illinois . .			4
District of Columbia .		6	9	Missouri .			5
Virginia .	2	23	34	Arkansas .			1
North Carolina	2	10	20	Cherokee Nation			1
South Carolina	3	10	16	Total . .	37	358	802

The present number, however, amounts to about a thousand. Thus the state of New York is mentioned in the table as having 161 newspapers; but a late publication states that there are 193, exclusive of religious journals. New York has 1,913,508 inhabitants. There are about fifty daily newspapers in the United States, two-thirds of which are considered to give a fair profit. The North American colonies, in the year 1720, had only seven newspapers: in 1810, the United States had 359; in 1826, they had 640; in 1830, 1000, with a population of 13,000,000; so that they have more newspapers than the whole 190 millions of Europe.

We have seen that newspapers were first issued in England by authority, in 1588, during the alarm occasioned by the approach of the Spanish armada, in order, by giving authentic information, to allay the general anxiety, and prevent the circulation of false rumours. From that time, newspapers have, with a few intermissions, generally appeared in London, sometimes at regular, and sometimes at irregular, intervals. During the civil wars, both parties had their newspapers. The Daily Courant, the first daily newspaper published in Britain, made its appearance at London in the early part of the reign of queen Anne. The earliest newspaper published in Scotland, was issued, under the auspices of Cromwell, in 1652. The Caledonian Mercury was, however, the first of the Scottish newspapers of native manufacture; it made its appearance at Edinburgh, under the title of Mercurius Caledonius, in 1660; but its publication was soon afterwards interrupted. In 1715, a newspaper was, for the first time, attempted in Glasgow. See Chalmers's Life of Ruddiman, pp. 102—121, for some interesting researches regarding newspapers.

The stamp duty on British newspapers used to be 4*d.*, with a discount of twenty per cent., which reduced the duty actually paid to 3½*d.* This tax brought annually to the revenue about half a million pounds sterling. In 1836, however, the duty was reduced to one penny on each newspaper, without discount; so that ordinary sized newspapers, which used to sell at 7*d.* or 7½*d.*, are now sold at 4*d.* and 4½*d.* The change in the price of the stamp came into operation on the 15th September, 1836. What effect it may have on the general economy of newspapers, is yet to be seen.

Advertisements form a considerable source of profit to newspapers; and without this source, some of the most widely circulated of them could not support their great expenditure. Each advertisement is now charged, without distinction of length, with a government duty of 1*s.* 6*d.*; but until 1833 the duty was 3*s.* 6*d.*

In drawing a comparison between the newspapers of the three freest countries, Britain, France, and the United States of America, we find, as we have just said, those of the last country to be the most numerous, while some of the French papers have the largest subscription; and the whole establishment of a first-rate London paper is the most complete. Its activity is immense. When Canning sent British troops to Portugal, in 1826, we know that some papers sent reporters with the army. The zeal of the New York papers also deserves to be mentioned, which sent out their news-boats, even fifty miles to sea, to board approaching vessels, and obtain the news that they bring. The papers of the large Atlantic cities are also remarkable for their detailed accounts of arrivals, and the particulars of shipping news, interesting to the commercial world, in which they are much more minute than the English. From the immense number of different papers in the United States, it results that the number of subscribers to each is limited, 2000 being considered a respectable list. One paper, therefore, is not able to unite the talent of many able men, as is the case in France. (See the article *Constitutionnel.*) There men of the first rank in literature or politics occasionally, or at regular periods, contribute articles. In the United States, few papers have more than one editor, who generally writes upon almost all subjects himself. This circumstance necessarily makes the papers less spirited and able than some of the foreign journals, but is attended with this advantage, that no particular set of men is enabled to exercise a predominant influence by means of these periodicals. Their abundance neutralizes their effects. Declamation and sophistry are made comparatively harmless by running in a thousand conflicting currents. How different would be the case if there existed in the United States but a few papers, with from 25 to 30,000 subscribers, and five times as many readers! It seems to us highly necessary for France to render the papers in the departments more important, and to counteract the overwhelming influence of a great city like Paris, always injurious to the free action of liberty. The leading French papers differ much from those of Britain and the United States, by the absence of advertisements, while some American papers allow little space to any thing else. As respects propriety of tone, generally speaking, the British, and especially the French papers, excel the American; and perhaps future ages may look upon the violence of political controversy which disfigures the journals of America in the present day with somewhat the same feeling as that with which we regard the intemperance of religious controversy at the period of the reformation. The leading spirits of that time used language which, at the present day, is mostly banished to Billingsgate.

The following account will show the gigantic apparatus of a London daily paper. The copy-right of the Times has been calculated at from £100,000 to £120,000; but it would be difficult to affix a correct value to such an establishment. If it be true that the shareholders have sometimes divided a net profit of £24,000 per annum, the capital must be estimated at a much higher rate. Employed upon each morning paper, there are an editor, a sub-editor, from ten to fourteen regular reporters, at salaries from four to six guineas per week, each; from thirty to thirty-five compositors in the printing-office; one or two readers, who correct the proofs as they come from the compositors; a reading-boy, whose duty it is to read the copy aloud, whilst the reader makes his corrections upon the proof; a printer; and a certain number of men and boys to attend to the printing machine, and to take off the papers as they fall from the cylinders; a publisher and sub-publisher; two or more clerks in the office, to receive advertisements and keep the accounts; a porter, a number of errand boys, &c. The salary of an editor, upon a respectable morning paper, is from £600 to £1000 per annum; and a sub-editor receives from £400 to £600 per annum. Besides the regular reporters of a newspaper, there are several occasional, or, as they are called, "penny a line" reporters; from the circumstance of their furnishing articles of intelligence at a fixed price per line, viz., 1¼d. or 1½d. They are not attached to any particular newspaper. The aggregate charge for copy furnished by these persons forms a considerable item in the weekly expenditure of a newspaper. The salaries paid by a first-rate morning paper weekly, to its editors, reporters, and others on the establishment, do not amount to less than £180 per week; and if to this be added the expenditure for occasional reporting, for assistance to the compositors, for foreign newspapers, and private correspondence, and various items which it is unnecessary to enumerate, we have a weekly expense of nearly £250. The chief editor's duty begins, strictly speaking, with the publication of the evening newspapers. He has to read their leading articles, and to refute or support their arguments. He remains at his post until a late hour, prepared to write comments on the foreign papers as they arrive (a duty in which he is generally assisted by his sub-editor), and to direct, in a leading article, attention to any topic of interest before the public. During the sitting of parliament, he is compelled frequently to remain at the office until two or three o'clock in the morning; and such is the energy with which the public press in the metropolis is directed, that it is not rare to see a leading article of nearly a column, written at two o'clock in the morning, on some subject which had been discussed an hour or two previously in the house of commons. The most extraordinary part of a morning paper is the reporting. It has been stated that the regular reporting establishment varies in number from ten to fourteen. Most of the persons so engaged are gentlemen of education, and frequently law students. During the parliament, the sittings of which commence at four o'clock in the afternoon, the reporters of the leading papers attend by turns, one succeeding the other, according to previous arrangement, each remaining in the house for half or three quarters of an hour; and the reporters of the minor papers much longer. If the debate is not heavy, the reporter in the house of commons, when relieved, enters a small room at the end of the lobby, which has been appropriated exclusively to reporters, and there arranges his notes (which are seldom taken in short hand, as, except in particular cases, short-hand reporting, from the impossibility of finding room in a newspaper for all that a member says, is rather injurious than useful) of the speeches delivered during his turn. He then proceeds at once to the office of the newspaper on which he is engaged, and the editor's attention is directed by him to any thing of commanding interest that has transpired. His slips, as they are written, are given by the printer to the compositors, whose number, during the sitting of parliament, is generally increased; and as one reporter follows another, it is not unusual for a debate, which has terminated only at twelve o'clock at night, to be set up in type, and ready for printing by two o'clock in the morning. On the nights of prolonged debate, when the houses sit late, some of the reporters may be compelled to go back and take what is called a *double turn*. So active and able are some of the reporters, that it is not an unfrequent thing for one reporter to supply, from the notes of three quarters of an hour, to the paper upon which he is engaged, from two to three columns of closely printed matter. In obtaining intelligence by express, some of the evening newspapers have, within the last two or three years, shown almost incredible exertion. The Courier and Sun have sometimes contained the speech of the king of France, at the opening of the chamber, twenty-six or twenty-seven hours after it had been obtained by their agents in Paris. During the last invasion of Spain by the French, the Globe regularly employed couriers from Paris, many of which arrived within the twenty-four hours; and the same industry was manifested in getting up communications from Liverpool, at a time when the affairs of South America possessed interest for the English public. The "penny a line" men are to the press what the Cossacks are to a regular army. The peculiar mode in which these persons, who are probably about twenty in number, obtain the means of subsistence, is worthy of notice. When the facts upon which an article is to be manufactured, have been collected, the reporter, by means of a paper, something between silver and bank paper, called *flimsy*, and prepared sheets of silk covered over with a thick coating of printer's ink, and dried, makes seven or eight copies for the several morning or evening newspapers. This is attended with very little trouble. The black and white sheets are placed alternately; the reporter writes on the upper paper with a piece of steel or glass, not too finely pointed, so that the paper may not be cut, and with a moderate degree of pressure the ink is transferred from the black to the white sheets, and he obtains seven or eight perfect copies. To each of these copies he affixes his name, and then sends them round to the newspaper offices to take the chance of their insertion. If the subject of the report is thought interesting, he is well paid; for a report of half a column, in each of the morning papers, will produce him, in the whole, more than £3 3s. From the competition, however, among these gentlemen, and the prudence of some editors as to the use of reports so furnished, it is seldom, indeed, that they are so fortunate.

A comparison of the number of periodicals and inhabitants of different countries gives the following results:—In 1827, there appeared, in Great Britain, 483 different newspapers and other periodicals to 23,400,000 inhabitants; in the United States, 802 newspapers, &c. to 11,600,000 inhabitants; in Sweden and Norway, 82 journals to 3,866,000 inhabitants; in the States of the Church, 6 newspapers to 2,598,000 inhabitants. (Stockholm, with 78,000 inhabitants, has 30 journals; Rome, with 154,000, only 3.) Denmark, to 1,950,000 inhabitants, has 80 journals, of which 71 are in the Danish language; 23 are devoted to politics, 25 to the sciences. Prussia has 12,416,000 inhabitants, and 288 journals and periodicals. (Berlin has 221,000 inhabitants, and 53 periodical works; Copenhagen has 109,000 inhabitants, and 57 journals.) The Netherlands have 6,143,000 inhabitants, and 150 journals. In the German confederation (excluding Austria and Prussia), there are 13,300,000 inhabitants, and 305 journals; in Saxony, to 1,400,000 inhabitants, 54 newspapers; in Hanover, to 1,550,000 inhabitants, 16 newspapers; in Bavaria, to 3,960,000 inhabitants, 48 newspapers. France, with a population of 32,000,000, has 490 periodical works (660 printing establishments, 1500 presses; in Paris, 81 printing establishments, or 850 presses). In Paris alone, containing 890,000 inhabitants, there are 176 periodical works.—As curiosities in this branch of literature, we may mention the newspaper established in Egypt by authority of Mohammed Pacha, printed at Boulac, near Cairo, and containing a report of all public transactions of consequence. February 21, 1828, appeared the first number of the Cherokee Phœnix, a weekly paper, published at New Echota, Georgia, partly in English, partly in Cherokee Indian. In British India six gazettes are published in the Bengal dialect.

NEWSTEAD ABBEY, celebrated as the residence of lord Byron, is situated in Nottinghamshire, 136 miles north-west of London, four miles from Mansfield. It was an Augustin monastery, founded by Henry II., and granted to John Byron by Henry VIII., at the time of the suppression of the monasteries. It has continued in the family ever since. Though much fallen to decay, it is still completely an abbey, and the greatest part of it is still standing in the same state as when it was first built. There are two tiers of cloisters, with numerous cells and rooms, and many of the original rooms are still in use. Of the abbey church, only one end remains. The house and gardens are entirely surrounded by a wall, with battlements; in front is a large lake, bordered with castellated buildings; all this is surrounded with bleak and barren hills, with scarce a tree to be seen for miles. Lord Byron, in his will, directed it to be sold. The "uses vile" to which it was condemned by the noble bard, seem but too truly depicted in his Childe Harold (i. 7).

> Monastic dome! condemned to uses vile!
> Where superstition once had made her den,
> Now Paphian girls were known to sing and smile;
> And monks might deem their time was come agen,
> If ancient tales say true, nor wrong these holy men.

NEW STYLE. See *Calendar*, and *Epoch*.

NEW TESTAMENT. See *Bible*.

NEWTON, SIR ISAAC, the most distinguished mathematician and philosopher of modern times, was born at Woolsthorpe, in Lincolnshire, December 25, 1642 (O. S.), and, at his birth, was so small and weak that his life was despaired of. On the death of his father, which took place while he was yet an infant, the manor of Woolsthorpe became his heritage. His mother sent him, at an early age, to the village school, and, in his twelfth year, to the town of Grantham. While here, he displayed a decided taste for philosophical and mechanical inventions; and, avoiding the society of other children, provided himself with a collection of saws, hammers, and other instruments, with which he constructed models of many kinds of machinery. He also made hour-glasses acting by the descent of water; and, a new wind-mill, of a peculiar construction, having been erected in the town, he studied it until he succeeded in imitating it, and placed a mouse inside, which he called the *miller*. Some knowledge of drawing being necessary in these operations, he applied himself, without a master, to the study; and the walls of his room were covered with all sorts of designs. After a short period, however, his mother took him home, for the purpose of employing him on the farm, and about the affairs of the house, and sent him, several times, to market, at Grantham, with the produce of the farm. A trusty servant was sent with him, and the young philosopher left him to manage the business, while he himself employed his time in reading. A sun-dial which he constructed, on the wall of the house at Woolsthorpe, is still shown. This irresistible passion for study and science finally induced his mother to send him back to Grantham, where he remained till his eighteenth year, when he was entered at Trinity college, Cambridge (1660). A taste for mathematical studies had, for some time, prevailed there; the elements of algebra and geometry usually formed a part of the course, and Newton had the good fortune to find the celebrated doctor Barrow professor. In order to prepare himself for the lectures, Newton read the text-books in advance: these were Sanderson's Logic and Kepler's Treatise on Optics; the Geometry of Descartes was also one of the first books that he read at Cambridge. He next proceeded, at the age of about twenty-one, to study the works of Wallis, and appears to have been particularly delighted with the celebrated treatise of that author entitled *Arithmetica Infinitorum.* Wallis had given the quadrature of curves whose ordinates are expressed by any integral and positive power of $1-x^2$, and had observed that if, between the areas so calculated, we could interpolate the areas of other curves, the ordinates of which constituted, with the former ordinates, a geometrical progression, the area of the curve, whose ordinate was a mean proportional between 1 and $1-x^2$, would express a circular surface, in terms of the square of its radius. In order to effect this interpolation, Newton began to seek, empirically, the arithmetical law of the co-efficients of the series already obtained; and, having done this, he rendered it more general by expressing it algebraically. Perceiving that this interpolation gave him the expression, in series, of radical quantities, composed of several terms, he directly verified this induction by multiplying each series by itself the number of times required by the index of the root, and found, in fact, that this multiplication reproduced exactly the quantity from which it had been deduced. Having thus ascertained that this form of series really gave the development of radical quantities, he was led to consider that they might be obtained still more directly, by applying to the proposed quantities the process used in arithmetic for extracting roots. This gave him, again, the same series, but made them depend on a much more general method, since it permitted him to express, analytically, any powers whatever of polynomials, their quotients, and their roots, by considering and calculating these quantities as the developments of powers corresponding to integral negative, or fractional exponents. Indeed, in the generality and in the uniformity given to these developments the discovery of Newton really consists; for Wallis had remarked before him, with regard to monomial quantities, the analogy of quotients and roots with integral powers, expressed according to the notation of Descartes; and Pascal had given a rule for forming, directly, any term of the development of binomial powers, the exponent being an integer. Thus was discovered the celebrated formula, known as Newton's Binomial Theorem (q. v.). Newton further perceived, that there is hardly any analytical research, in which the use of it is not necessary, or at least possible, and immediately made a great number of the most important applications of it. Thus he obtained the quadrature of the hyperbola, and of many other curves, and also extended his formulæ to the surfaces of solids, the determination of their contents, and the situation of their centres of gravity. Wallis, in his *Arithmet. Infin.* (1665), had shown that the area of all curves may be found, whose ordinate is expressed by any integral power of the *abscissa*, and had given the expression for this area in terms of the ordinate. Newton, by reducing into series the more complicated functions of the *abscissa*, which represent the ordinates, changed them into a series of monomial terms, to each of which he was able to apply the rule of Wallis. He thus obtained as many portions of the whole area as there were terms, and, by their addition, obtained the total. But the far more extensive, and, in some respects, unlimited applications that Newton made of this rule, depended on a general principle, which he had made out, and which consisted in determining, from the manner in which quantities gradually increase, what are the values to which they ultimately arrive. To effect this, Newton regards them, not as aggregates of small homogeneous parts, but as the results of continued motion, lines being considered as described by the movement of points, surfaces by that of lines, solids by that of surfaces, and angles by the rotation of their sides. Again, considering that the quantities so formed are greater or smaller, in equal times, according as the velocity with which they are developed is more or less rapid, he endeavours to determine their ultimate values from the expression for these velocities, which he calls *fluxions*, naming the quantities themselves *fluents*. In fact, when any given curve, surface, or solid, is generated in this manner, the different elements which either compose or belong to it, such as the ordinates, the abscissas, the lengths of the arcs, the solid contents, the inclinations of the tangent planes, and of the tangents, all vary, differently and unequally indeed, but nevertheless according to a regular law, depending on the equation of the curve, surface, or solid under consideration. Hence Newton was able to deduce from this equation the fluxions of all these elements, in terms of any one of the variables, and of the fluxion of this variable, considered as indeterminate; then, by expanding into series, he transformed the expression, so obtained, into finite or infinite series of monomial terms, to which Wallis's rule became applicable; thus, by applying it successively to each, and taking the sum of the results, he obtained the ultimate value, that is, the fluent of the element, which he had been considering. In this consists the method of fluxions, of which Newton, from that time, laid the foundation, and which, eleven years later, Leibnitz again discovered, and presented to the world in a different form,—that of the differential calculus. Newton made these important discoveries before completing his twenty-third year, and collected them in a manuscript, entitled *Analysis per Æquationes Numero Terminorum infinitas*, but did not communicate them to any one.

About this time (1665), being obliged to quit Cambridge on account of the plague, he retired to Woolsthorpe, and now turned his attention more closely to subjects of natural philosophy. As he was one day sitting under an apple-tree, the fall of an apple led him to reflect on the nature of that remarkable principle which urges all bodies towards the centre of the earth. "Why," he asked himself, "may not this power extend to the moon? and, if so, what more would be necessary to retain her in her orbit about the earth?" He considered that if the moon was retained about the earth by terrestrial gravity, the planets, which move round the sun, ought, similarly, to be retained in their orbs by their gravity towards that body. Setting out with the law of Kepler, that the squares of the times of revolution of the different planets are proportional to the cubes of their distances from the sun, Newton found, by calculation, that the force of solar gravity decreases proportionally to the square of the distance; and having thus determined the law of the gravity of the planets towards the sun, he endeavoured to apply it to the moon; that is, to determine the velocity of her motion round the earth by means of her distance, as settled by astronomers, and of the intensity of gravity, as shown by the fall of bodies at the earth's surface. To make this calculation, it is necessary to know exactly the distance from the surface to the centre of the earth, expressed in parts of the same measure that is used in marking the spaces described, in a given time, by falling bodies at the earth's surface; for their velocity is the first term of comparison that determines the intensity of gravity at this distance from the centre, which we apply afterwards at the moon's distance, by diminishing it proportionably to the square of the distance. It then remains only to be seen if gravity, when thus diminished, has precisely the degree of energy necessary to counteract the centrifugal force of the moon, caused by her observed motion in her orbit. Unfortunately, at that time, there existed no correct measure of the earth's dimensions. (See *Degrees, Measurement of.*) Newton was obliged to employ the imperfect measures then in use, and found that they gave for the force which retains the moon in her orbit, a value greater by one-sixth than that which results from her observed circular velocity. This small difference seemed, to his cautious mind, a strong proof against his bold conjecture. He imagined that some unknown cause modified, in the case of the moon, the general law of gravity indicated by the motion of the planets. Yet he did not abandon his leading notion, but determined to wait till study and reflection should reveal to him this supposed unknown cause. In 1666, he returned to Cambridge, was chosen fellow of his college (Trinity college) in 1667, and, the next year, was admitted A. M.; but he did not disclose his secrets even to his instructer, doctor Barrow. In 1668, however, Mercator published his *Logarithmotechnia*, in which he had obtained the area of the hyperbola referred to its asymptotes, by expanding its ordinate into an infinite series, which was the main secret of Newton's method. Barrow showed this work to Newton, who immediately gave him his own treatise (the Analysis, &c.), but did not yet publish it.

In the course of 1666, his attention had been accidentally drawn to the phenomena of the refraction of light through prisms. His experiments led him to conclude that light, as it emanates from the radiating bodies, is not a simple and homogeneous substance, but that it is composed of a number of rays, endowed with unequal refrangibility, and possessing different colouring properties. More than two years elapsed before he returned to his researches on this subject; but, in 1669, being appointed professor of mathematics, and preparing to lecture on optics, he endeavoured to mature his first results, and composed a complete treatise, in which the fundamental properties of light were unfolded, established, and arranged by means of experiments alone, without any mixture of hypothesis—a novelty at that time almost as surprising as these properties themselves. Thus it appears, that the three great discoveries which form the glory of his life, the method of Fluxions, the Theory of Universal Gravitation, and the Decomposition of Light,—were conceived before the completion of his twenty-fourth year.

In 1672, Newton was chosen a fellow of the royal society, to which he communicated a description of a new arrangement for reflecting-telescopes, which rendered them more convenient by diminishing their length without weakening their magnifying powers, and, soon after, the first part of his labours on the analysis of light. When the first feelings of surprise and admiration, excited by this noble work, had subsided, the society appointed three members to study it fully, and report upon it. Hooke, a man of extensive acquirements and an original turn of thought, but of excessive desire of renown, being one of the members, undertook to draw up the report. Instead of discussing the new facts, as presented by the experiments of Newton, he examined them merely in relation to a hypothesis of his own—that light is simply the effect of vibrations excited and propagated in an elastic medium—and concluded by allowing whatever appeared reconcilable with his own hypothesis, and by advising Newton not to seek any other explanation of the facts. Newton in reply (*Phil. Trans.*, vii.), after exposing some errors of Hooke, adduces new experiments confirming his former results, and refutes the objections to the production of whiteness by the mixture of all the rays. To several other attacks (particularly one by Huygens), which appeared in the Philosophical Transactions, and which were conducted on similar principles, he was obliged to reply. In vain did he declare that he neither advanced nor admitted any hypothesis whatever, and that his sole object was to establish and connect facts by means of the laws of nature. This severe and abstract method of reasoning was little understood, and it is hardly conceivable into what minuteness of detail he was obliged to enter. So much was he disgusted with these difficulties, that he gave up his intention of printing his lectures on Optics with his treatise on Series. Before quitting the lists, however, he addressed another paper (1675) to the royal society, completing the account of his results, and of his views on the nature of light. This treatise, united with his first paper on the analysis of light, afterwards served as the base of the great work, Treatise on Optics (1704), in which, however, the experimental investigation of the phenomena is more extensive, and more strictly separated from all hypothesis. The new experiments with which it was enriched, relate principally to the colours observed in thick plates of all bodies, when they are presented, in a proper manner, to the incident ray. Newton reduced them to the same laws as those of the phenomena in thin plates; and then, considering these laws as established facts, equally certain with the particular experiments from which they are deduced, yet far more universal, he unites them all in one general property of light, each peculiarity of which is characterized with such exactness as to make the general property a pure expression for all the observed laws. The essence of this property is, that each particle of light, from the instant when it quits the radiating body whence it emanates, is subject, periodically, and at equidistant intervals, to a continual alternation of dispositions, to be reflected from, or transmitted through, the surfaces of the diaphanous bodies which it meets with; so that, for instance, if such a surface presents itself to the luminous particle during one of the alternations, when the tendency to reflection, which Newton called the "fit of easy reflection," is in force, this tendency makes it yield more easily to the reflecting power of the surface, while, on the other hand, it yields with more difficulty when it is in the contrary phase, which he termed the "fit of easy transmission." (See *Light* and *Optics*.) In his paper of 1675, after excusing himself for proposing a conjecture as to the nature of light, and declaring that it had no connexion with the facts which he had discovered, he goes on to give one which he should be inclined to consider most probable, if he were obliged to adopt any. He then admits the existence of an imperceptible fluid (which he calls *æther*), extending everywhere in space, and penetrating all bodies with different degrees of density. This fluid he considers as highly elastic, and, consequently, pressing against itself and the material parts of other bodies, with an energy proportional to its actual density. If this æther be disturbed or agitated, in any one point, by any cause which produces a vibratory motion, this motion must transmit itself, by undulations, through all the rest of the medium; and if these undulations encounter, in their passage, the material particles forming the substance of any body, they will agitate them with considerable force. Now, light, he admits, consists of a peculiar substance, different from the æther, but composed of heterogeneous particles, which, darting in all directions from luminous bodies, with great velocity, agitate the æther in their passage, and excite undulations. He does not attempt to determine the essence of these particles.

From this time till 1679, Newton communicated nothing to the royal society, and in this interval appears to have been occupied with astronomical observations. In that year he had occasion to write to Hooke about a system of physical astronomy, on which the royal society had asked his opinion. In his letter he proposed, as a matter deserving attention, to verify the motion of the earth by direct experiment, viz. by letting bodies fall from a considerable height, and observing if they follow exactly in a vertical direction; for if the earth turns, since the rotary velocity at the point of departure must be greater than at the foot of the vertical, they will be found to deviate from this line towards the east, instead of following it exactly, as they would do if the earth did not move. Hooke replied, that wherever the direction of gravity is oblique to the axis of the earth, bodies in falling change parallels, and approach the equator. This led Newton to consider whether the elliptical motion of the planets could result from a force varying inversely as the square of the distance, and, if so, under what circumstances such a result would ensue. In proposing his experiment to the society, he had considered the motion of the heavy body as determined by a force of constant intensity, and had concluded the trajectory to be a spiral, doubtless because he imagined the body to fall in a resisting medium, such as the air. Hooke replied, that it should not be a spiral, but that in a vacuum it would be an eccentric ellipse, which, in a resisting medium, would change into an eccentric ovoidal curve; and he represented the eccentric ellipse as the consequence of a force inversely proportional to the squares of the distances from the earth's centre. Newton, having examined this result by mathematical calculations, found that an attractive force, emanating from a centre, and acting inversely as the squares of the distances, would produce motions exactly resembling the planetary motions, both in regard to the form of the orbit and the velocity of the body at each point. This was the secret of the system of the world; but it still remained to account for the discordance of the moon's motion, which had before (1665) embarrassed Newton. But, in 1682, having learned the results of the new measurement of a degree by Picard, he resumed his former calculations from these data. Finding, as he advanced, the manifest tendency of these numbers to produce the long-desired results, he became so much agitated as to be unable to go on with his calculation, and requested one of his friends to finish it. Two years were spent in penetrating the consequences of this discovery, and preparing his immortal work, *Philosophiæ Naturalis Principia Mathematica*, during which time he lived only to calculate. He would sometimes rise, and, suddenly arrested by some new conception, would sit on his bedside for hours together, and would forget his meals, unless reminded of the necessity of taking nourishment. It was not till 1686, that he finally concluded to present his work to the society, at the expense of which it was printed in 1687. Not more than two or three of his contemporaries were capable of understanding it, and more than fifty years elapsed before the great physical truth which it contained was thoroughly understood by the generality of scientific men.

In 1687, Newton was one of the delegates sent by the university of Cambridge, to maintain its rights before the high commission court, when they were attacked by James II., and, in 1688, was elected, by the university, to the convention parliament, but never distinguished himself in that body. He had always taken great interest in chemistry, and occupied himself occasionally with experiments in that science. He had constructed a small laboratory for prosecuting his investigations, and seems, after the publication of the *Principia*, to have devoted almost his whole time to them. One morning (1692), he had accidentally shut up his little pet dog Diamond in his room, and, on returning, found that the animal, by upsetting a candle on his desk, had destroyed the labours of several years. On perceiving his loss, he only exclaimed, "Oh, Diamond! Diamond! you little know the mischief you have done." But the grief caused by this circumstance injured his health, and, M. Biot endeavours to show, for some time impaired his understanding. This fact of a derangement of his intellect, according to Biot, explains why Newton, though only forty-five years old when the *Principia* was published, never after gave to the world a new work in any branch of science, and merely published some which had been previously composed. Doctor Brewster, however, refutes this notion.

In 1696, he was appointed warden of the mint, a general recoinage having then been undertaken. In this office, he rendered essential service, and, in 1699, was made master of the mint. In 1701, he was again returned to parliament by his university; in 1703, he was chosen president of the royal society; and, in 1705, was knighted by queen Anne. In 1704, he gave to the world his Optics (in English; translated into Latin by doctor S. Clarke), which contains all his researches on light. The whole merit of this extraordinary work has not been fully appreciated till within a few years. Other works, published about this time, were his *Arithmetica Universalis* (1707; more complete, 1712); *Methodus Differentialis* (1711); and his *Analysis per Equationes Numero Terminorum infinitas* (1711). We have already given an account of the celebrated dispute between Newton and Leibnitz (1712), in the article *Leibnitz*. (See the *Commercium Epistolicum*, or Collection of Letters, published by the Royal Society in 1712.) The princess of Wales (daughter-in-law of George I.), a woman of a cultivated mind, had received Newton with great kindness, and was fond of conversing with him. Newton having one day explained to her a system of chronology which he had composed for his amusement, she requested a copy for her own use. A copy was also given, to abbé Conti, who immediately published it without Newton's knowledge; and it therefore became necessary to prepare a more correct edition, which appeared in 1728, under the title Chronology of Ancient Kingdoms amended. His observations upon the Prophecies of Holy Writ (1733) is an attempt to show the fulfilment of the prophecies. In his Historical Account of two notable Corruptions of the Scriptures, he discusses the two passages in the Epistles of St John and St Paul, relating to the Trinity, which he supposes to have been altered by copyists.

At this period of his life, the reading of religious works, with the conversation of his friends, formed almost his only amusement, after performing the duties of his office. He had almost ceased to think of science; and, during the last ten years of his life, when consulted about any passage in his works, he would reply, "Ask Mr De Moivre; he knows better than I do." When his friends expressed their admiration of his discoveries, he said, "To myself I seem to have been as a child playing on the sea-shore, picking up a pebble here and there, while the immense ocean of truth lay unexplored before me." His countenance was rather calm than expressive; his manner, rather languid; his health was good until his eightieth year, when he suffered from a calculous disorder, which occasioned his death March 20, 1726—7. His corpse lay in state, in Jerusalem chamber, Westminster, and, on the 28th, was interred in Westminster abbey. A monument was erected to his memory, by his family, with an inscription ending with these words, applicable to Newton only: *Sibi gratulentur mortales tale tantumque exstitisse humani generis.** His statue, by Roubiliac, stands in his college, at Cambridge. Horsley's edition of his Works (5 vols., 4to, 1779—85), with the *Opuscula*, collected by Castillon (3 vols., 4to, Lausanne, 1744), and his letters, inserted in the *Biographia Britannica*, contains nearly all his printed works.† Pemberton's View of Newton's Philosophy (1728), and Maclaurin's Account of Newton's Discoveries, are valuable works.—See, also, Birch's *History of the Royal Society* (vol. 3d). The best edition of the *Principia* is that of Lesueur and Jacquier (4 vols., 4to, Geneva, 1739—42; 4 vols., 8vo, Glasgow, 1822). A Life of Newton, by doctor Brewster, appeared in 1831. The article *Newton*, in the *Biographie Universelle*, by M. Biot, is very complete. The Collections for the History of Grantham, with authentic Memoirs of Sir Isaac Newton, contains much important matter.

NEWTON, Thomas, an English Theological writer, born at Lichfield in 1703, was educated at Trinity college, Cambridge, where he obtained a fellowship. In 1744, he obtained the rectory of St Mary-le-Bow, London, and, in 1745, took the degree of D.D. He published an edition of the Paradise Lost of Milton, with notes, and a memoir of the author, in 1749; and he afterwards edited, in a similar manner, the Paradise Regained. But his literary reputation depends chiefly on his Dissertations on the Prophecies (1759, 3 vols., 8vo), several times reprinted. In 1761, doctor Newton was made bishop of Bristol, and afterwards obtained the deanery of St Paul's, which he held till his death (1782.) His works were published with an autobiographical memoir (2 vols., 4to).

NEW WORLD; a name frequently applied to the Americas, not because they are supposed to have been of a later origin than the eastern hemisphere, or the Old World, but because they became known to the Europeans at a comparatively recent date.

NEW YEAR'S DAY; the first day of a year.

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* Pope's epitaph on Newton is well known:—

Isaacus Newton hic jacet,
Quem immortalem cœli, naturæ,
Tempus ostendunt,
Mortalem hoc marmor fatetur.

Nature and all her works lay hid in night,
God said, Let Newton be,—and all was light.

† The manuscripts, letters, and other papers of Newton, have been preserved in different collections. His correspondence with Cotes, relative to the second edition of the *Principia*, and amounting to between sixty and a hundred letters, a considerable portion of the manuscript of that work, and two or three letters to doctor Keill, on the Leibnitzian controversy, are preserved in the library of Trinity college, Cambridge. Newton's letters to Flamstead, about thirty-four in number, are deposited in the library of Corpus Christi college, Oxford. Several letters of Newton, and, we believe, the original specimen which he drew up of the *Principia*, exist among the papers of Mr William Jones (the father of Sir William Jones), which are preserved at Shirburn castle, in the library of lord Macclesfield. But the great mass of Newton's papers came into the possession of the Portsmouth family, through his niece, lady Lymington, and have been safely preserved by that noble family. There is reason to believe that they contain nothing which could be peculiarly interesting to science; but as the correspondence of Newton with contemporary philosophers must throw considerable light on his personal history, we trust that it will, ere long, be given to the public.—Brewster's *Life of Newton*.

(Respecting the determination of the same, see *Year*, and *Epoch.*) We shall treat of it in this place as a festival. It is natural for man to distinguish this day, which begins one of the great divisions of his life, with particular usages. We find this to be the case with most civilized nations. The new year of the Jews began with the month *Tishri*. It was considered as the day on which God holds judgment (hence *Jom Haddin*, day of judgment), and also as the anniversary of the day on which Adam was created. —The Romans offered sacrifices on new year's day to Janus, particularly a white steer. In the whole city, much incense was burned, and the newly elected magistrates went in procession to the capitol, where they sacrificed to Jupiter. The success of any affair on that day was considered a good omen for the whole year. People who met greeted each other with *Annum novum faustum felicemque tibi*. Presents given were called *xenoi*, and those returned, *apophoreta, strenæ*. They consisted chiefly of gilt dates, dried and gilt plums and figs, honey, rare coins, spoons, lamps, ornamented with a head of Janus. The emperors made these presents a heavy tax: Caligula, for instance, received them during the whole day, standing in the ante-chamber of his palace, from the high officers. Claudius abolished this burdensome obligation. Henry III., king of England, seems to have imitated the Roman emperors in extorting new year's presents; and queen Elizabeth, according to doctor Drake, principally supported her jewel chest and her enormous wardrobe by levying similar contributions. Even her majesty's household servants offered such presents; and, among others, the dustman is recorded as having presented her with two bolts of cambric. The 3000 gowns, mentioned in D'Israeli's Curiosities of Literature, as having been found in her wardrobe at her decease, show that the tax must have been heavy. These presents, however, were, doubtless, often given on the old principle *do ut des*. The Druids of ancient Britain were accustomed, on certain days, to cut the sacred mistletoe with a golden knife, in a forest dedicated to the gods, and to distribute its branches with much ceremony, as new year's gifts, to the people. Among the Saxons, this day was also observed by gifts, accompanied with festivities; and they reckoned their age by the number of these merrymakings at which they had been present. Similar customs existed with other German tribes, accompanied by many superstitious observances, so that many laws of Charlemagne are found to be directed against them; and to this very day, a number of ceremonies, originally superstitious, but now serving principally to excite mirth, are practised in Germany, on the night of the last of December and first of January. Among the most common, at present, is the melting of tin or lead, which is thrown at midnight into a basin of water, when it will form strange figures, which serve for divination. New year of the Christians, being the eighth day after Christmas, is the festival of Christ's circumcision. The day is a holiday, celebrated with religious service all over the European continent. In England, it is not, nor in the United States, where the aversion of the Puritans to religious festivals, and other causes, prevented their introduction. They were even prohibited in some of the American colonies, by severe laws. At an early period, most Christians celebrated new year on our 25th of March (the conception of Mary). In Germany, this was the case till the ninth century. At a later time, it was changed to December 25, and so continued in Germany until the fourteenth century, and in England even to 1752. Of modern nations, the French celebrate new year with the most spirit. Smith, in his Games and Festivals, says, that it has been estimated that the amount expended upon *bon-bons* and sweetmeats alone, for presents on new year's day, in Paris, exceeds £20,000 sterling, while the sale of jewelry and fancy articles in the first week of the year is computed at one fourth of the sale during the whole twelve months. In Germany, presents are universally given on Christmas eve. In England, new year's presents are not so frequent, and the souvenirs, and other works of light literature, professedly intended for such presents, are in circulation so early, that they are stale before new year arrives. In New York, a custom exists (probably a remainder of Dutch manners) of paying visits of congratulation on new year's day. Good store of cookies (Dutch, *koek*, cake) are provided for the entertainment of the visitors. As it is considered the duty of gentlemen to visit all the ladies of their acquaintance on this occasion, it may easily be imagined that the day is one of considerable stir in fashionable society.

NEW YORK; one of the thirteen original states of the American confederacy.

Boundaries, &c. This state is bounded north by Upper and Lower Canada, east by Vermont, Massachusetts, and Connecticut, south by New Jersey and Pennsylvania, and west by Pennsylvania, lake Erie, and the Niagara river. The territory of this state is situated between lat. 40° 30′ and 45° N., and between lon. 5° 5′ E. and 2° 55′ W. from the city of Washington. Its extreme length from east to west, including Long Island, is about 408 miles; exclusive of it, 340 miles. Its greatest breadth from north to south is about 310 miles; its area 45,658 miles. The estimate includes the whole surface, except the waters of the great lakes. The territory now constituting the state of Vermont was included within the limits of the colony of New York, and was claimed as a part of this state until 1790, when New York gave her assent to the erection of the present state of Vermont.

Civil Divisions. It is divided into fifty-six counties, namely, New York, King's, Queen's, Richmond, Suffolk, Westchester, Dutchess, Putnam, Orange, Rockland, Ulster, Sullivan, Delaware, Greene, Columbia, Albany, Rensselaer, Schenectady, Schoharie, Montgomery, Hamilton,[*] Saratoga, Washington, Warren, Essex, Clinton, Franklin, St Lawrence, Jefferson, Lewis, Herkimer, Oneida, Madison, Oswego, Otsego, Chenango, Broome, Cortlandt, Tompkins, Tioga, Steuben, Onondaga, Cayuga, Seneca, Ontario, Yates, Wayne, Livingston, Monroe, Orleans, Genesee, Alleghany, Niagara, Erie, Cattaraugus, and Chautauqua. In this enumeration, we have commenced with the most south-eastern counties, and proceeded north and west. These counties are subdivided into five cities, namely, New York, Albany (the seat of government), Troy, Hudson, and Schenectady, and 764 towns. There are 101 incorporated villages, many of which have names differing from the towns in which they are situated: thus the flourishing village of Rochester is in the towns of Yates and Brighton, Geneva in the town of Seneca, &c. Besides the cities and towns already enumerated, the following may be mentioned as among the most flourishing and populous: Utica, Buffalo, Brooklyn, Canandaigua, Poughkeepsie, Auburn, Ithaca, Catskill, Newburg, &c.

Face of the Country, &c. The state may be most correctly described as an elevated tract, with indentations in various places below its general level. The most important depressions are the great basins in which are situated lakes Erie and Ontario, and the long, narrow valley which contains the Hudson river and lake Champlain. The two last are connected with each other by a valley occupied by the Mohawk river and the Oneida lake. The mountains, or elevated ground, is thus also separated into three principal divisions. The first of these occupies the space south of the Mohawk river and the Ontario valley, and between the Hudson river and lake Erie; the second is the mountain district north of the Mohawk, and between lake Champlain and the east end of lake Ontario; and the third comprises that part of the mountain range east of the Hudson which is within the boundaries of this state. The western part of the first division, or that which lies between Seneca lake and lake Erie, forms a high table-land, about 2000 feet in mean elevation, and the highest part of it is occupied by the counties of Steuben, Alleghany, Cattaraugus, and Chautauqua. From this elevation flow the Alleghany, the Susquehannah, and the Genesee rivers, respectively terminating in the gulf of Mexico, the Atlantic ocean, and the gulf of St Lawrence. Chautauqua lake, the most western of the larger lakes in this state, is 1291 feet above the level of the ocean, and 723 feet higher than lake Erie. It empties into the Alleghany. The eastern part of the first division, or the space between Seneca lake and the Hudson, south of the Mohawk, is occupied by several parallel ridges of mountains, which may be considered as continuations of the Alleghany ridge, passing out from Pennsylvania. These ridges are in a north and south direction, and their indentations give rise to several fertile valleys, particularly those of the Susquehannah, the Delaware, and their branches. The highest is the Catskill mountains, which bound the valley of the Hudson on the west. The Round Top, which is considered the highest summit of these mountains, is, according to captain Partridge, 3804 feet above the level of the tide water of the Hudson. There is also a narrow table-land on this subdivision, which merits attention from its explaining the course of rivers and lakes within it. It is situated a little south of the line of the Erie canal, and continues almost uninterruptedly from the Catskill mountains to the head of Seneca lake. On this are found Otsego and Schuyler's lakes, going to the south, and giving rise to the sources of the Susquehannah. Both of these are at an elevation of about 1200 feet. Skaneateles, Owasco, and Cazenovia lakes discharge their rivers to the north, but their elevation is several hundred feet less than that of the former. Cayuga and Seneca lakes are not highly elevated, the one being only 387 feet, and the latter only 447, above the level of tide-water. They thus occupy two long, narrow ravines, in a north and south direction, and are separated by a ridge 800 feet above Cayuga lake.

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[*] This county, not being separately organized, acts in conjunction with Montgomery county, and, for all political purposes, is considered a part thereof.

The second division of the mountain district is traversed by at least five or six parallel ridges passing in a north-eastern direction, and which may be considered as continuations of the Appalachian chain. Portions of them are called Kayaderossas, Sacandaga, Mayfield mountains. The highest elevation that has been ascertained with accuracy is 2686 feet, being that of a peak belonging to the ridge that passes through Herkimer and Hamilton counties and the northern part of Essex, near the sources of the Hudson.—The third division, or that part which lies on the east side of the Hudson, crosses the Hudson in the vicinity of West Point, and forms the highlands of that river. It also constitutes the dividing ridge between the Hudson and the Connecticut.

The depressions or basins in the state of New York, are equally deserving of notice. Those of lakes Erie and Ontario are parts of the great St Lawrence basin which embraces the whole of the five western lakes. Lake Erie has an elevation of 565 feet above the level of the ocean, lake Ontario of 231 feet. The river Niagara discharges the waters of the former into the latter, and on it is found that great natural curiosity which alone deserves a visit across the Atlantic. The river narrows at twenty miles below lake Erie, and the rapids then commence. A mile beyond, we come to the falls—151 feet on the Canada side, and 164 on the American. It is needless to attempt a description of their grandeur and magnificence. They must be seen by day and by moon-light, in every position, and under various conditions of the atmosphere, in order to realize even a portion of their splendour. (See *Cataract.*) The river at this place is nearly half a mile wide, and on the very brink of the precipice is situated Goat island, which contains about eighty acres of land, and, extending up the stream, divides the water. The whole length of the Niagara is thirty-five miles, and the descent from lake Erie to lake Ontario is 336 feet. If we proceed along the basin of the Ontario, we shall pass through a series of fertile countries, constituting the slope, watered by numerous rivers, which all finally empty into the lake. The Genesee is the outlet of the Canesus, Hemlock, and Honeoye lakes. The Oswego and its tributaries, the Clyde and Seneca, carry the waters of Canandaigua, Crooked, Seneca, Cayuga, Owasco, Skaneateles, Onondaga, and Oneida lakes, into lake Ontario. The eastern termination of this basin is occupied by the Mohawk, its valley winding its way at the Little falls through stupendous rocks; while, towards the north-east, the slope towards the St Lawrence, indicated by the course of the Grass, Racket, Oswegatchie, and St Regis rivers, shows it to be a continuation of that towards the lakes.—The Hudson and Champlain valley or basin is nearly in a direct line north and south. It is remarkable for its depth below the general surface of the level of the adjoining country, being elevated, at its highest part, only 147 feet above the level of tide-water in the Hudson, and fifty-four feet above the surface of the lake. The northern part contains lake George and lake Champlain, the former emptying into the latter by a descent of nearly 200 feet. The southern part includes the valley of the Hudson, and communicates with the valley of the Mohawk, its tributary, which enters it in a south-easterly direction. The Hudson rises in the northern part of the state, its extreme branches having their sources in Hamilton and Essex counties. The Mohawk rises far in the north-west, and a little west of Oneida lake. The numerous falls and rapids on these beautiful rivers are remarkable. The Trenton falls, on the West Canada creek, a branch of the Mohawk, and the Little falls and Cohoes, on the Mohawk itself, Glenn's falls, the Great falls of the Sacandaga (also a branch), Baker's falls, on the Hudson—are only a portion of the numerous depressions which not only furnish many of the most beautiful of natural objects, but also are made to minister in various ways to the prosperity and improvement of the community. From Glenn's falls to the junction of the Hudson with the Mohawk, there is a fall of 117 feet. No fact in the topography of the state of New York is more remarkable than the peculiar position of the Hudson and its branches. If we trace the course of any Atlantic river south of it, we shall find the navigation closed by the mountain chain on the west. Not so with the Hudson. It penetrates the highlands, and, after passing up some 160 miles, is met by a tributary whose sources reach nearly to the lakes. Here the happy conformity of the country is such as to permit the establishment of an artificial navigation. By the success of the Erie canal, the country, in short, though crossed by lofty mountains intersecting it from the north-east to the south-west, is, for all commercial purposes, becoming an island.

Geology and Mineralogy. On examining Mr Maclure's map illustrative of the geology of the United States, it will be seen that most of the formations of geologists exist in this state; and some of these are among the most interesting that can be investigated, either by the mineralogist or the public economist. We refer particularly to the salt and gypsum found in the western part of the state. The Onondaga salt springs (as they are usually termed) are situated at the head of the lake of the same name, about 130 miles west of the city of Albany. Though surrounded by brine springs, the waters of the lake are perfectly fresh. Plants which are found on the sea-shore are noticed here, and, in particular, the *salicornia* and *salsola.* Below the mud, or decayed vegetable matter, which constitutes the valley of these springs, a stratum of earthy marl is found, containing numerous fossil univalves, and this again appears to be succeeded by a conglomerate. The peculiar nature of the underlying rock, or rather its position, does not seem settled, and we have not room to go into the discussion concerning it. Salt is manufactured here to a large extent by the various processes of boiling, of evaporation with artificial heat, and of solar evaporation. In 1830, there were manufactured above 1,400,000 bushels. Gypsum in its various forms of earthy gypsum, selenite, and even alabaster, is found, particularly in the counties of Onondaga and Cayuga, and is extensively applied for agricultural purposes. Nor must we omit a notice of the impure limestone found in the western as well as northern parts of the state, which has been a most important aid in the construction of the canals of the state. At an early period, it was found that if burned, and mixed with proper ingredients, it would set under water, and, accordingly, has been most extensively used. Marble is obtained in large quantities from the quarries of Sing Sing for architectural purposes. Its purity evidently increases with the depth of the excavations. In noticing the prominent articles of mineral wealth, we must not pass by the vast beds of iron ore found in the counties west of lake Champlain. In 1825, there were no less than 103 iron-works, and 73 trip-hammers, in the counties constituting the fourth and fifth senate districts. The iron ore of Columbia county, in the vicinity of the Hudson, is also highly valued and extensively manufactured. Traces of other metals, as lead, silver, zinc, titanium, &c., have also been observed in various parts of the state. It is still a problem whether anthracite or bituminous coal is to be found in sufficient quantity for useful purposes within the bounds of the state. Of minerals, which may be rather deemed objects of curiosity, this state furnishes numerous varieties. This will be sufficiently illustrated when we refer to the granitic districts near New York, and on the borders of lake Champlain—the transition and secondary districts that compose the body of the state. In fossil remains, even of some of the higher animals, there is also an abundant supply for investigation.

Temperature, &c. A mass of interesting facts on this subject has been obtained, in consequence of the regents requiring annual meteorological reports from the academies under their care. These academies are situated in every part of the state; and the mean temperature of the whole thus furnishes an approximation towards the actual state of thermometric heat.

In 1826, the mean temperature of ten places, reporting complete annual tables, was	49.38
1827, the mean temperature of eighteen places was	46.48
1828, the mean temperature of twenty-four places was	49.50
1829, the mean temperature of twenty-eight places was	46.45
1830, the mean temperature of thirty-four places was	48.15
Mean of the five years,	48.00

The quantity of rain and snow has also been ascertained in a similar manner. Thus

	Inches.
in 1826, the mean rain and snow of nine places was	36.34
1827, the mean rain and snow of seventeen places was	44.29
1828, the mean rain and snow of twenty-five places was	36.74
1829, the mean rain and snow of twenty-five places was	34.88
1830, the mean rain and snow of thirty-two places was	38.85
Mean of the five years,	38.22

The highest degree of temperature noticed in these tables is+104, at which the thermometers stood in the Montgomery academy, county of Orange, July 20, 1830. Its latitude is north 41° 32′, and longitude west 74° 10′. The lowest degree noticed is—33, at which the thermometer stood in Lowville academy, county of Lewis, January 31, 1830; north latitude 43° 47′; west longitude 75° 33′. The thermometric range is thus 137 degrees. The state is, in general, very healthy.

Population, &c. Under the colonial government, the inhabitants of New York consisted principally of four classes:—1. Dutch, the descendants of the first settlers; 2. English and Scotch emigrants, and their posterity; 3. descendants of French Protestants, who took refuge in the colony on the revocation of the edict of Nantes; 4. Germans, descendants of a colony of Palatines, who, in 1709, fled to England to escape persecution in Germany, and, in the ensuing year, emigrated to New York under the patronage of the British government. On the termination of the revolutionary war, a tide of emigration set in from the New England states, which continued for many years, and to such an extent, that a majority of the present population is probably composed of natives of those states, or their descendants. Many emigrants from Ireland, and from other parts of Europe, have also been attracted to this state, and particularly to its great commercial metropolis and the flourishing towns in the interior. The influence of this varied descent is to be seen in many of the institutions and prevailing habits of the people; and it has probably tended to render the inhabitants of New York more liberal in their opinions, less wedded to particular systems, and more ready to imbibe and to follow the spirit of the age, than they might otherwise have been. Until within a few years, the German and Dutch languages were much spoken in particular districts, but both are rapidly falling into disuse. The progress of population in the territory composing the state of New York is almost unexampled, as will be seen by the following table:—Population in 1702, 20,708; in 1731, 50,259; in 1738, 60,100; in 1771, 158,898; in 1790, 340,120; in 1800, 586,050; in 1810, 959,049; in 1820, 1,372,812; in 1825, 1,616,458; in 1830, 1,919,404. In 1790, the territory west of the Seneca lake contained only 1081 souls; its population in 1830 was 406,906. According to the state census in 1825, the area was divided into acres, improved, 7,256,048; unimproved, 21,964,888=29,220,936, or 45,658 square miles. Population to a square mile, in 1825, nearly 35; in 1830, 42. The rapid increase of some of the cities and towns also deserves notice. New York, in 1790, contained 33,130 inhabitants; in 1810, 96,373; and in 1830, 203,009: Albany, in 1790, 3498; in 1820, 12,630; in 1830, 24,238: Troy, in 1820, 5261; in 1830, 11,605; Rochester, in 1820, 1502; in 1830, 9269; Utica, in 1820, 2972; in 1830, 8320. New York is now entitled to thirty-four representatives in the house of representatives of the United States, and to thirty-six presidential electors.

Canals. The following extensive and important communications have been constructed at the public expense, and under the direction of commissioners appointed by the state:—1. The *Erie Canal* commences at the city of Albany, and terminates at Buffalo, in the county of Erie, connecting the waters of the Hudson river with those of lake Erie. This canal was commenced in 1817, and has been in successful operation, throughout its whole extent, since 1825. It is 363 miles in length, and has 689 feet of lockage. The cost of this canal is so blended with the cost of the Champlain canal (they both having been constructed at the same time, and by the operation of the same laws), that it cannot be ascertained with accuracy, what each cost. 2. The *Champlain canal* commences at West Troy, six miles north of Albany, the point where the Erie canal turns west from the Hudson river, and terminates at Whitehall, in the county of Washington, connecting the waters of the Erie canal with those of lake Champlain. This canal is completed, and has been in successful operation since 1825. It is sixty-four miles in length, and has 188 feet of lockage. This canal has a lateral cut connecting it with the Hudson river, at Waterford, by three locks, as the Erie canal has, connecting it with the same river, opposite Troy, by two locks. The cost of these two canals, as stated by the commissioners of the canal fund, at the close of the year 1825, when they were first declared complete, was 9,267,234 dollars, 48 cents. This was exclusive of any payments of interest upon the loans which had been made to construct them, and which payments of interest then amounted to 1,507,857 dollars, 73 cents. 3. The *Oswego canal* commences at the Erie canal, at the village of Syracuse, in the county of Onondaga, and terminates at the village of Oswego, in the county of Oswego, connecting the waters of the Erie canal with those of lake Ontario. It was completed in 1828, at a cost of 565,437 dollars, 35 cents, is thirty-eight miles in length, and has 123 feet of lockage. 4. The *Cayuga and Seneca canal* commences at the Erie canal at Montezuma, in the county of Cayuga, and terminates at Geneva, in the county of Ontario, connecting the waters of the Erie canal with those of the Seneca lake. This canal has also a lateral branch to East Cayuga village, on the Cayuga lake, thus connecting the waters of this, and consequently of the Erie canal, with the Cayuga lake. Its cost, to its completion, in 1829, was 236,804 dollars, 74 cents; its length, including the lateral canal, is twenty-two miles, 704 yards, and it has eighty-three feet 6 inches of lockage. 5. The *Chemung canal* begins at the head of the Seneca lake, and terminates at Elmira, on the Chemung river, in the county of Tioga, being intended to connect the waters of the Seneca lake with the head waters of the Susquehannah river. It is to have a navigable feeder from its summit level to Painted Post, in the county of Steuben. The length of the canal is twenty-two, and of the feeder thirteen miles. The lockage upon both is about 520 feet. Contracts for their completion by the 15th day of October, 1831, were made, for the sum of 290,263 dollars. 6. The *Crooked lake canal* commences at the Seneca lake, at Dresden, and terminates at the Crooked lake, at Penyan, being intended to connect the waters of the Seneca lake with those of the Crooked lake. Its length is about six miles, 1540 yards, and its lockage is about 270 feet. Income of the public canals, in 1830: Erie canal, 954,328 dollars; Champlain canal, 78,148 dollars; Oswego canal, 12,335 dollars; Cayuga and Seneca canal, 11,987 dollars; total, 1,056,799 dollars. Disbursements: interest on canal debt, 379,695 dollars; repairs, salaries, &c., 261,656 dollars. Canal debt, January 1, 1831, 7,825,035 dollars. For the payment of this debt, the canal fund, consisting of the canal tolls, duties on salt, and on sales by auction, and several other items, is inviolably pledged. The revenue of this fund, in 1830, independently of the tolls above stated, was 383,614 dollars. The *Delaware and Hudson canal*, commenced July 1825, and completed October, 1828, was constructed by a private company, incorporated under the laws of New York and Pennsylvania. Its capital consists of 1,500,000 dollars, of which 500,000 dollars are employed in banking, in the city of New York. The credit of the state of New York was also loaned to the company to the amount of 800,000 dollars. This canal commences at the head of tide on the Rondout creek, in the county of Ulster, three miles from the Hudson river, and terminates at Honesdale, opposite the mouth of the Lackawaxan river, in Pennsylvania. Length, eighty-three miles in New York, and twenty-five in Pennsylvania. This canal being principally intended to open a communication with the coal mines in Luzerne county, Pennsylvania, a rail-road has been constructed by the company, from the head of the canal, at Honesdale, to the mines at Carbondale. Its length is sixteen miles. For further information on the canals of New York, see *Canals.*

Public Instruction, &c. Since the establishment of the state government, great exertions have been made by the legislature to extend the means of education to all classes. The appropriations made for this purpose, including the capital and income of the common school and literature funds, amount to more than 6,000,000 dollars. There are four colleges, viz., Columbia, in the city of New York; Union, at Schenectady; Hamilton, near the village of Clinton, Oneida county; and Geneva, at Geneva, Ontario county. The whole number of students in these institutions, during the year 1830, including those in the preparatory schools connected with Columbia and Geneva colleges, was 677. (For the university of New York, instituted in 1830, see the article *New York City.*) There are two medical colleges, one in the city of New York, and the other at Fairfield, Herkimer county; students in 1830, 350. There are 57 incorporated academies and seminaries, which derive from the public funds a portion of their annual support, and which had, in 1830, 4218 students. But the common schools are among the most important and interesting institutions in the state. Every town is divided into a suitable number of school districts, in each of which a school-house has been erected, and is provided with furniture and fuel, at the expense of the district. From the income of the common school fund 100,000 dollars are distributed among the school districts, according to the number of scholars therein, between the ages of five and sixteen; and the towns are required to raise, by tax, an amount equal to that received from the state, and are allowed to raise double that sum. The following is from the official reports made in January, 1831: Productive capital of the school fund, 1,696,743 dollars, 66 cents; revenue in 1830, 100,678 dollars, 60 cents; local school fund, capital not stated; income in 1830, 14,095 dollars, 32 cents; whole number of school districts, 9062, of which 8630 made returns; whole number of scholars taught in the districts making returns, 499,424, of whom 497,503 were between five and sixteen; amount of public monies received, 100,000 dollars from state treasury, 124,556 dollars, 04 cents, raised by tax on the several towns, and 14,095 dollars, 32 cents, derived from local funds possessed by certain towns, equal to 239,713 dollars, 36 cents; total amount paid for teachers' wages, 586,520 dollars; estimated amount of all expenses incurred in 1830, for the support of common schools, by the public and individuals, 1,061,699 dollars. There are two institutions for the instruction of the deaf and dumb; one in the city of New York, having, in 1830, eighty-five pupils, and one at Canajoharie, having, during the same year, twenty-nine pupils. They are chiefly supported at the public expense. There are in the state about 700 deaf mutes. The institution in the city of New York, incorporated April 15, 1817, has imparted its benefits to more than 300 pupils. Some of these pay; others are supported by the state, by the supervisors of the county, by a female association for the relief of deaf mutes, or by private charity. The edifice or asylum for the accommodation of the pupils is situated about three and a half miles from the city hall. It has accommodations for 150 pupils and the requisite number of instructers. It cost 36,000 dollars. The grounds, consisting of ten acres, are handsomely laid out, in lawns and gardens, planted with trees and shrubbery. Workshops are erected in the rear of the asylum, in which a majority of the male pupils, during the time of relief from study, spend a few hours every day, in acquiring a knowledge of some mechanical employment. Some, also, are engaged in horticulture. The female pupils, at the same time, are taught needle-work and other household duties. The pupils are divided into five classes, and furnished with large slates. The regular term of study is five years; and the annual charge for pay pupils is 130 dollars; but this charge is often reduced to meet the particular cases of applicants. The funds of the institution have been furnished by private contributions, by the legislature of the state, and by the corporation of the city. During the year 1830, the receipts were nearly 17,000 dollars. Besides the establishments above-named, there are in every part of the state, particularly the large towns and villages, numerous schools and seminaries, supported by private individuals.

Religion, &c. The constitution secures "the free exercise and enjoyment of religious profession and worship, without discrimination or preference," and accordingly most denominations of Christians, and some Jews are to be found in the state. There are a few religious corporations which are possessed of estates granted to them before the revolution, and now of considerable value; but in general the clergy are dependent for their support on the annual contributions of their respective congregations. Clergy, in 1830, Presbyterians and Congregationalists, 431; Protestant Episcopalians, 118; Baptists, 274; Reformed Dutch, 106; Methodists, 372; Lutherans, 13; various other denominations, 68; total, 1382. There are four theological seminaries in the state connected with the Protestant Episcopal, Presbyterian, Baptist, and Lutheran churches. There are two flourishing societies of Shakers; one at New Lebanon, in Columbia county, and the other at Niskauna, in the county of Albany. For an account of this sect, see *Shakers.*

Prisons and *Prison Discipline.* In each county, a public jail is established by law, the management of which, though recently somewhat improved, is yet lamentably defective. But the state prisons at Auburn and Sing Sing, the former of which now contains about 600, and the latter about 800 convicts, are models both in respect to their arrangement and discipline. The convicts are compelled to labour together in silence during the day, and are lodged in separate dormitories at night. The earnings of the convicts in the Auburn prison, during the year 1830, amounted to 40,341 dollars, and the expenses of the establishment, including repairs, &c., to 36,226 dollars. The amount received for the labour of the convicts at Sing Sing, during the same period, was 13,651 dollars, 44 cents; expenses of the prison, 53,571 dollars, 01 cents. This prison having been but recently completed, the future earnings of the convicts will probably exceed those for the year referred to. Economy, however, is not alone to be regarded in the constitution of such establishments; and experience has not yet proved whether the silent system of discipline, adopted in America, be beneficial to the moral, and not injurious to the physical, powers of the prisoner.

Government, Laws, &c. By the amended constitution of this state, adopted in 1821, the legislative power is vested in a senate and assembly, the former consisting of 32, and the latter of 128 members. The senators are chosen for 4 years, and must be freeholders. The members of the assembly are elected annually. For the election of senators, the state is divided into 8 senate districts, each of which is entitled to 4 senators, and one of whom is annually elected in each district. The members of the assembly are chosen by the several counties, among whom they are apportioned, according to a rule prescribed in the constitution. The executive power is vested in a governor, who holds his office for 2 years. A lieutenant governor is chosen at the same time, and for the same term. He is president of the senate, and, whenever the office of governor becomes vacant, takes the place of that officer. The right of suffrage is enjoyed by every male citizen, of the age of twenty-one years, who has been for one year an inhabitant of the state, and for six months a resident of the county where he may offer his vote. Under this liberal regulation, the number of electors is very great; in 1828, they amounted to 276,583. Sheriffs, coroners, and county clerks are elected by the people; the other civil officers are generally appointed either by the governor and senate, the two branches of the legislature, or the governor alone, except clerks of courts, district attorneys, and some other officers, who are appointed by the courts. Field officers of the militia, below the rank of major-general, are elected by the officers of their respective brigades, &c.; field officers above that rank are appointed by the governor and senate, or the governor; staff officers are appointed by their respective commanders. The judiciary consists of the following courts:—1. *The court for the trial of impeachments and the correction of errors*, composed of the president of the senate, the thirty-two senators, the chancellor, and the justices of the supreme court. This court tries all impeachments of civil officers preferred by the assembly, in whom the power of impeachment is vested, and reviews, on appeals and writs of error, the decisions of the court of chancery, and of the supreme court. But on the hearing of an appeal from a decree in chancery, the chancellor has no voice in the final sentence; and when a writ of error is brought on a judgment of the supreme court, the justices of that court have no voice for its affirmance or reversal. 2. *The court of chancery*, the powers of which are vested in the chancellor and in eight vice-chancellors. 3. *The supreme court*, consisting of a chief justice and two justices. 4. There are eight *circuit judges*, who possess the powers of a justice of the supreme court at chambers, and in the trial of issues joined in the supreme court, and in courts of oyer and terminer and jail delivery. All the circuit judges possess equity powers, as vice-chancellors, except the judge of the first circuit (that including Long and Staten islands and the city of New York), for which a vice-chancellor has been created by special law. 5. *A county court*, possessing, to a limited extent, both civil and criminal jurisdiction, is established for each county. Its decisions are liable to review in the supreme court. 6. *A surrogate* is appointed for each county, who possesses exclusive original jurisdiction in cases of wills and intestacy. 7. There are several other local courts;

as the *superior court* of the city of New York, which consists of a chief justice and two associate justices, and possesses an extensive civil jurisdiction; the *mayor's courts* and *special justices' courts*, in the several cities; and the *justices' courts* in the several towns. These latter courts are held by justices of the peace. Every town in the state has four of these officers, and each of them has the power, with a few exceptions, of trying civil suits where the amount demanded does not exceed fifty dollars. They are chosen by popular election, and hold their offices for four years, but are so arranged in classes that one is annually chosen in each town. The chancellor, justices of the supreme court, and circuit judges are appointed by the governor and senate, and hold their offices during good behaviour, or until they shall attain the age of sixty years. Judges of the county courts, surrogates, and other local judicial officers are appointed in the same manner, and for limited periods, in no case exceeding five years, but may be re-appointed. The constitution of this state not only contains several of the safeguards usually inserted in bills of rights, but has some provisions of a peculiar character; e. g.; No minister of the gospel, or priest, of any denomination whatsoever, can hold any civil or military office; all such inhabitants as, from scruples of conscience are averse to bearing arms, are entitled to be excused therefrom, on paying to the state an equivalent in money; the assent of two-thirds of the members elected to each branch of the legislature, is requisite to every bill appropriating the public property for local or private purposes, or creating, altering, or renewing any corporation; the inviolability of the common school fund is perpetually secured; the tolls on the Erie and Champlain canals, the duties on the manufacture of salt, and certain other items of revenue, are inviolably appropriated to the payment of the canal debt, and until such payment shall have been made, are incapable of reduction; the legislature are prohibited from disposing of these canals, or the salt springs, or any part thereof; and whilst the right to draw such lotteries as had already been provided for by law, is fully recognised, provision is made to prevent additional grants of this nature.

The common law of England, varied and modified from time to time, by numerous acts of the colonial and state legislatures, forms the basis of the jurisprudence of New York; and there is no one of the United States, in which the judicial institutions and the modes of legal proceeding, bear so close an analogy to those of England. At the same time, there is probably no state in the confederacy, which has made greater efforts, by means of its statutory regulations, to improve the English system, and to adapt it, both in its principles and details, to the institutions and habits of a free, intelligent, and active population. There have been, since the revolution, four several revisions of the statute laws of the state, viz. in 1787, in 1801, in 1813, and in 1827—8. The revision in 1787—8 consisted of a consolidation or re-enactment of various British and colonial statutes, with numerous amendments in form and substance; that of 1801 was a re-enactment in an amended form, of such of the former statutes as had been varied by intermediate legislation, or that seemed to require alteration; and that of 1813 was a work of the same character. But the revised statutes of 1827—8 are substantially a new code of statute law; the various general provisions of the former statutes having been written anew, in a more concise and perspicuous phraseology, and the whole work having been arranged in a systematic and methodical order. Many alterations were made in the substance of the former statutes; in numerous instances, the rules of the common law, with the view of rendering them better known and more stable, were reduced to a written text. and inserted in the statutes; whilst in other cases those rules were abolished or greatly modified, especially in reference to the law of real estate, and to the practice in the courts. The enactment of this body of statute law, which went into full operation on the 1st of January, 1830, is, perhaps, one of the most important events in the history of American jurisprudence.

History. The territory now composing the state of New York was comprehended in queen Elizabeth's grant of the tract called Virginia, and in the grants of North and South Virginia, made in 1606, by James I. But no settlement was attempted in that territory under either of those grants; nor was this part of the continent known to Europeans until September, 1609, when the river which bears his name, and the islands at its mouth, were discovered by Henry Hudson, an enterprising English navigator, then in the service of the Dutch East India company. After sailing up the river about 150 miles, he returned to Europe, and made known to his employers the result of his voyage. The Dutch immediately commenced a trade with the natives of the country, among whom were the powerful tribes afterwards known as the *Five*, and still later as the *Six Nations*. Trading establishments were soon formed by these navigators, one at fort Orange (now Albany) as early as 1613, and one on the island of Manhattan, at New Amsterdam (now the city of New York), a few years later. In 1614, the trade was confirmed by the government of Holland to the West India company, which, in 1621, was incorporated with a grant of the exclusive right to trade in America, &c., and with ample powers to establish and maintain settlements therein. Under this grant, the company took possession of the territory discovered by Hudson; gave to it the name of New Netherlands; and in 1623, commenced its colonization, which was gradually continued, for about forty years, under their auspices. During this period, the affairs of the colony were managed by a governor or director-general and a council, who were appointed by the company, and in whom all the legislative, executive, and judicial powers were vested. In the mean time, new discoveries were made, and the Dutch claims extended to Connecticut river on the east, and the Delaware on the south, in consequence of which they were on both sides brought into collision with the English, who set up a title to the whole coast. May 12, 1664, Charles II. made an extensive grant to his brother, the duke of York and Albany, which included within its bounds the colony of New Netherlands. A small armament was soon after fitted out in England, for the purpose of reducing that colony. The vessels appeared in the harbour of New Amsterdam, in August, 1664, and on the 27th of that month, the fort and town of New Amsterdam, and on the 24th of September, the garrison at fort Orange, capitulated to colonel Richard Nicolls, who had been appointed by the duke of York, to take possession of the province in his behalf, with the title and powers of deputy-governor. The inhabitants thereupon submitted to his authority; the name of *New Amsterdam* was changed to *New York*, which name was also extended to the whole country; and that of *fort Orange* was altered to *Albany*. After this, the colony was in the hands of a governor and council appointed by the duke of York, until July 30, 1673, when the garrison of New York surrendered to a squadron of Dutch ships, the commanders of which appointed a governor and other magistrates, who continued in authority until February 9, 1674, when the territory was again surren dered to the British, in pursuance of the treaty of London. June 29, 1674, a new grant was made by Charles II. to the duke of York. After the accession of the latter to the throne, the colony became a part of the dominions of the British crown, and the government was administered by royal governors and a local council and assembly, until May, 1775, when the people determined to take up and exercise the power of civil government, which was accordingly done, through the medium of committees of safety and of the provincial congress, until the provisions of the state constitution, adopted in April, 1777, were carried into effect. The inhabitants of New York sustained an important part in the war of the revolution, and its territory was the scene of several sanguinary conflicts and of many interesting events. Upon the conclusion of that war, the state commenced a new and distinguished career, which has ever since been steadily continued, and some of the results of which are briefly exhibited in this article.

Authorities: Burr's *Atlas of the State of New York; Topography of the State of New York*, by professor Henry, and other articles in the Transactions of the Albany Institute (vol. i.); Darby's *Geographical Works;* doctor L. C. Beck *On the Onondaga Salt Springs;* M. H. Webster's *List of the Minerals in the State of New York;* Smith's *History of New York* (edition of New York Historical Society); Moulton's *History of the Colony of New Netherlands;* Spafford's *Gazetteer of the State of New York;* Williams's *New York Annual Register for* 1831; documents and proceedings of the legislature of New York, &c.

NEW YORK, the largest and most populous city in the United States, lies in the state of that name, and is situated at the junction of the Hudson and East rivers, at the head of the bay of New York, and about sixteen miles from the Atlantic ocean, in lat. 40° 42′ N., 74° 1′ 8″ W. lon. from Greenwich, England; and 2° 54′ 22″ E. from the city of Washington. It stands on an island formed by the two rivers just named, and a small river called *Haerlem*, which connects them. The length of this island is about fifteen miles, from south to north, and its average breadth about one mile and a half. It is separated, on the north, from the continent, by Haerlem river, which is crossed by several bridges; from New Jersey, on the west, by Hudson's river; from Long Island, on the east, by the East river; and from Staaten Island, to the south, by the bay or harbour. According to Van der Donck, who published a History of the New Netherlands, at Amsterdam, in 1656, Hudson's river was the English name of the great river coming from the north; but the Dutch "called it *Mauritius*, after prince Maurice, who then presided over the government of Holland." The Indian name of the island was *Manhattan;* the Dutch called the city *Nieuw Amsterdam;* and the British changed it to the name which it still retains. The same writer gives us the following description of the bay of New York:—"The bay on which Staaten Island is situated is the most celebrated, because the East and North rivers flow into it—rivers, a particular description of which will be presently given, together with a number of kills, gats, and creeks, some of which resemble small rivers, and are navigable, as Raritan kill, kill Van Kull, Nieuvesink, &c. This bay is also so formed as to render it safe from all boisterous winds, and a thousand ships of burthen may harbour in it within the land. The entrance into the bay is extensive, and is accompanied with but little danger to those who have once gone, or have been taught the passage. If persons are so inclined, and the wind fair, they may in one tide proceed from sea to the city of New Amsterdam, which lies five (Dutch) miles from the ocean, and that when deeply laden, with an easy sail, and by ships of the greatest burthen."—The following is the depth of water over the bar, as furnished by the pilot of the United States' ship Boston, which passed it in June, 1830, with the wind from the westward.

Carried over the bar . . .	25 ft.	6 in.
Tide had fallen	1	6
	27 ft.	0 in.

The whole island of New York constitutes one county, which is governed by the city charter, and divided into fourteen wards, each equally represented in the common council, and each electing its own municipal officers. Members of congress and assembly are elected by the whole people, and whoever has the highest number of votes, is chosen, whether that number constitutes a majority of the whole or not. The common council sits, and the courts are held, in the city hall, a handsome marble building, finely situated in an extensive park. There is, perhaps, no place in the world where the municipal authority exercises such despotic sway over the property of the citizen, in opening, levelling, widening streets, and other alterations and improvements. It is not an uncommon case for property to be assessed, for one or other of these purposes, for more than it is worth; and the only privilege accorded to the owner is that of abandoning it to the corporation, and paying the rest out of his own pocket. Under this system, it cannot, however, be denied, that New York has advanced in beauty and improvements almost beyond example. The population, in 1697, was 4302; in 1756, 13,040; in 1790, 33,130; in 1800, 60,489; in 1810, 96,373; in 1820, 123,706; in 1825, 166,086; and, in 1830, 203,009. In 1769, in a hotly contested election of four days, the number of votes taken was 1515; of the voters 917 were freeholders: in 1830, the number of votes for members of congress was upwards of 21,000; the proportion of freeholders not known, as property is no longer the basis of representation. The revenue of the city, in 1830, was 1,036,930 dollars; the expenditure, 1,033,419; and the debt, 774,455. In the same year, the revenue collected at the custom-house was 21,756,709 dollars; the foreign tonnage entering the port, 450,868 tons; the arrivals from foreign ports, 1510, of which 1366 were American. The number of coasting vessels frequenting the port is almost incalculable. For 1810, the assessment of real and personal property was 125,288,518 dollars; in 1688, the value of estates assessed was £78,231. In 1824, the number of deaths was 4341; in 1825, 5018. The proportion of births to deaths is not known as it ought to be, in order to draw any useful practical conclusions from this subject. Of these deaths, one-sixth were from consumptions. The greatest number of deaths, in 1824, was in the month of August, the smallest in December. In 1825, the greatest mortality was in July, and the smallest in April.

The air of New York is keen and cold in winter, partly owing to its being entirely surrounded by water, which freezes more or less during that season. The spring is generally lingering and backward, owing to the great prevalence of chilly easterly winds, coming directly from the sea; but the summer is less oppressive than in Philadelphia and Baltimore, and the autumn, for the most part, very pleasant. During the heats of summer, the Battery and Castle garden afford a never-failing source of coolness, and a prospect equally refreshing and delightful. The nights are almost always rendered comfortable, even in the hottest weather, by the sea breezes, the influence of which is felt very sensibly.

On the whole, the climate is not unfavourable to health or long life, except to persons inclined to consumption. To them it is highly dangerous. The water in the lower part of the city is brackish.

Columbia college is at present the only institution of the kind in New York. It is finely situated, on an open square, ornamented with majestic trees; and the standard of classical education is supposed to be higher than in most of the colleges of the United States. The faculty consists of a president; a professor of moral philosophy, rhetoric, belles-lettres, and political economy; a professor of Greek and Latin; a *Jay* professor of ditto; a professor of natural and experimental philosophy and chemistry; a professor of mathematics, analytical mechanics, and physical astronomy; a professor of law; a professor of the Italian language and literature; and a professor of the French language and literature. The number of students is about 100. There is a grammar school connected with the college. It was founded by royal charter, in 1754, which has been frequently confirmed, with occasional alterations, by the legislature of the state. Columbia college possesses an estate valued at 400,000 dollars. The university of the city of New York is an institution recently established, chartered by the legislature in February, 1831. It is projected on the broad and liberal scale of the universities on the continent of Europe, and promises to be of great advantage to the literature of the United States. Its funds have been raised by the subscriptions of liberal individuals. It is governed by a council of thirty-two members, chosen by the subscribers, together with the mayor and four members of the common council of the city. A large amount of money has been raised for its endowment.

There are numerous schools of all kinds in the city, in which all classes and colours may be accommodated; so that it is not too much to say that the means of obtaining such an education as is essential to the ordinary occupations and pursuits of life, are within the reach of all who will exert themselves to make use of them. There are upwards of 100 churches in the city, of almost every denomination of believers. Of these, some are of a handsome order of architecture, and splendidly ornamented within. The disposition of the people of New York is very liberal towards the endowment and support of religious establishments, Bible and missionary societies, &c. Of all the churches of the United States, Trinity church is the best endowed. It is restricted, by its charter, to an actual revenue of £5000 sterling a year, and has been obliged to alienate a vast property in the city, in order to keep within bounds. But for this, its revenues would probably have amounted to six, perhaps ten times the sum to which it is restricted by charter. The nature of this work does not admit of particularizing the different charitable institutions and societies for the relief of human misery. It is sufficient to say, that there is scarcely a want or infirmity to which our nature is exposed, that has not a resource in some one of these institutions, which are supported either by public munificence or private charity. Neither is New York behind her neighbours in the number of her literary and scientific institutions, although her almost exclusively commercial pursuits might furnish some apology if she were. The most ancient of these, it is believed, is the society library, founded in 1754, and containing upwards of 22,000 volumes; the historical society, incorporated in 1809, and which has collected and preserved a vast number of records, appertaining to the early history of the United States, and the state of New York particularly. The lyceum of natural history has been very successful in the pursuit of its objects, and its collections and publications do it great honour. The Clinton hall association is an incorporation for the promotion of literature, science, and the arts, which has but lately attained to an existence, which, it is hoped, will be prosperous; and the mercantile library association can hardly fail of being eminently useful, if properly conducted. There are two academies of the fine arts in New York—the American and the National—the former supported by amateurs, the latter composed of artists, with a few exceptions. In 1827, the returns made, according to law, to the comptroller of the state, made the total of banking capital in New York amount to 15,960,403 dollars. Since that period, several new banks have been chartered, adding largely to this sum. The number of insurance companies is upwards of forty.

There is no city in the United States, perhaps in the world, which possesses greater advantages of situation than New York, both for internal and external commerce. These advantages have been improved by a vast line of canals connected with the Hudson, and concentrating the produce of an immense region on its bosom, all of which at length finds its way to the great mart of domestic and foreign trade. It is here that merchants and traders resort from all quarters; from the shores of the Atlantic, the confines of the lakes, and the banks of the Mississippi, with a certainty that they can dispose of their own produce, and supply themselves with every article they require. It is here, too, that strangers and travellers congregate, as the place of departure to every part of the world, attracted by the facilities offering themselves at regular stated periods. It may serve to give some idea of these, to state, that there are opportunities by regular packets to Liverpool four times a month; to Havre, three times; to London, twice; to Hull, Greenock, Belfast, Carthagena, Vera Cruz, Charleston, Savannah, New Orleans, Mobile, Washington, Boston, Philadelphia, Baltimore, Norfolk, and, indeed, to almost every place of note in the United States, in lines of vessels, sailing at stated times, which may be relied upon with almost perfect certainty. The advantageous situation of New York naturally inclines the inhabitants to commercial pursuits; but of late years large capitals have been invested in manufactures, which are daily becoming objects of attention. But the probability is, that it will long remain in a great degree a central point for the commerce of the United States.

That part of the coast of America which comprehends the state of New York, was first discovered by Sebastian Cabot, who was employed by Henry the Seventh of England, in 1497. But he made no attempts at landing, or forming settlements, contenting himself with claiming the country for his sovereign, by right of discovery. In 1609, Henry Hudson, an Englishman, acting under a commission from the king of England, entered the bay of New York, and sailed up the river as far as latitude 43° north. The English writers maintain that he was employed by their government, and that he sold the country thus discovered to the Dutch, without authority. The Dutch writers, on the contrary, maintain, that he was in the service of the Dutch East India company at the time. Be this as it may, the English made no opposition, for some time, to the settlement of the country by the Dutch. The right of the English was, however, in some measure recognised, by the Dutch applying for, and receiving permission from James the First in 1620, "to build some cottages on Hudson's river, for the convenience of their vessels engaged in trade with Brazil." Under this license, they settled a colony, to which they gave the name of the *New Netherlands*. Various disputes about boundaries, &c., occurred, for several years afterwards, between the English, the Dutch, and the Swedes; but these are no longer subjects of interest. The first buildings erected in New York were in 1621, near the junction of the East and North rivers, about Whitehall, and Broad street, and Coenties, and Old slips. The first Dutch governor was Wouter van Twiller, in 1629, who was succeeded by William Kieft, whose successor was Petrus Stuyvesant, the last of the Dutch governors. King Charles the First having made complaints of the encroachments of the Dutch on New England, the states-general declared the settlement of New Netherlands "to be only a private undertaking of the West India company of Amsterdam." The 12th of March, 1664, Charles the Second granted to his brother James, duke of York, "all Mattawacks, now Long Island, all Hudson's river, and all the lands from the west side of Connecticut river to the east side of Delaware bay, together with the royalties and rights of government." The duke sold that part of the grant which comprehends New Jersey, and the remainder, which comprehended the present state of New York, was retained by him, and so called in honour of the proprietor. The possession was guaranteed to him by the states-general, by the treaty of Breda, in 1667. Previous to this, however, in 1664, the New Netherlands was taken by the English. In 1673, it was retaken by the Dutch, and in 1674, on the 9th of February, it again fell into the hands of the English, and so remained until the revolution. In 1683, the first colonial legislature was convened in New York. In 1765, a congress of deputies from the colonial assemblies met at the same place to consult about grievances. In 1770, the liberty pole, which had been set up by the citizens, was cut down by the soldiers, and a new one erected, secured with iron. About the same time, the assembly gave great offence by voting 5000 dollars for the supply of the king's troops quartered in the colony. On this occasion, an address was published "To the betrayed inhabitants of the city of New York," signed "A Son of Liberty," which the assembly pronounced a "a false, seditious, and infamous libel." Captain, afterwards general M'Dougall, was brought before the chief-justice as the publisher, refused to give bail, was committed to prison, and afterwards admitted to bail. He was ordered before the bar of the assembly at their next meeting, refused to ask pardon, was committed to prison for contempt, and there remained until the assembly was prorogued, in 1771. About the middle of December, 1773, seventeen chests of tea, which had been brought to the city from a tea ship lying at Sandy Hook, were seized by the citizens and thrown into the river. In the year 1775, the assembly of the province met in New York, and renounced all concern in the proceedings of the congress which convened at Philadelphia the preceding year, declining choosing members to the new one. At the same time, they petitioned the king, in their own names, for a redress of grievances; remonstrated in behalf of the people of Massachusetts; and concluded by disavowing all ideas of independence. This course gave great offence to the popular party denominated the *sons of liberty*, who called a meeting, March 6, which eventuated in an appeal to force, in which the tories were put to flight by the sons of liberty, armed with hoop-poles; and the scale from that moment turned in favour of the popular party, under captain Sears, or *king Sears*, as he was familiarly called. On receipt of the news of the affair at Lexington, Sears, in conjunction with captain, afterwards general Lamb, called a meeting, in which it was resolved, that the custom-house should be closed. A committee of 100 persons was appointed to preserve order in the city, and an association entered into to stand by the continental congress. But the citizens were far from being united. There was a strong party among the more wealthy, which only awaited an opportunity to thwart these measures. Captain Sears, who had been ordered, by the convention appointed to direct the affairs of the colony, to remove the cannon from the battery, succeeded in his object, though fired upon by the Asia seventy-four, which lay off in the river. The conduct of the citizens of New York not being quite agreeable to the sons of liberty, captain Sears advised general Washington to send a body of troops to secure the city; but the general could not spare them. General Lee, however, by the assistance of governor Trumbull of Connecticut, collected a body of 1200 militia for the purpose. Being detained at Stamford, he sent a part of these on under the command of captain Sears, and followed soon after. The inhabitants were greatly alarmed at their arrival, the British naval commandant having declared that he would fire the city if any continental troops entered it. To this Lee answered, "that if the men-of-war should set one house on fire in consequence of his coming, he would chain a hundred of their friends together by the neck, and make the house their funeral pile." The 17th of March, the British having evacuated Boston, Washington despatched general Heath, with five regiments, and shortly afterwards followed, with nearly all his army, to New York. After the defeat of the Americans on Long Island, and the masterly retreat of Washington across the East river, he was obliged, by a series of operations on the part of the enemy, to retreat across Haerlem river to the continent. This left the city at the mercy of the British, who accordingly took forcible possession, which they retained until the 25th of November, 1783, when they finally evacuated it. The day has ever since been commemorated by a military procession and public rejoicings. The 4th of December following, Washington took leave of the officers of the army, at Francis's hotel. Calling for a glass of wine, he thus addressed them—"With a heart full of love and gratitude, I now take leave of you, devoutly wishing that your latter days may be as prosperous and happy as your former have been glorious and honourable." The ceremony was in the highest degree affecting, and few of the officers could refrain from tears. In 1789, the first congress, under the new constitution, met at New York, and Washington was sworn into the office of president of the United States, by Chancellor Livingston. From this period, the city, which at the time of its surrender by the British, was estimated to contain little more than 20,000 people, has continued to advance in wealth and numbers, with a pace as steady as it has been rapid.

NEW ZEALAND. See *Zealand, New.*

NEW ZEALAND FLAX. See *Flax, New Zealand.*

NEW ZEALAND SPINAGE (*tetragonia expansa*); a succulent trailing plant, destitute of beauty, inhabiting that country whose name it bears. It has lately been introduced into Europe, and also into America, as a substitute for spinage, over which it has this advantage, that, if watered, it will produce leaves of the greatest succulency throughout the whole summer. A bed of twenty plants is said to be sufficient to give a daily supply for a large table.

NEY, Michel, duke of Elchingen, prince of Moscow, marshal and peer of France, grand-cross of the legion of honour, knight of St Louis, and of several orders in foreign countries, was born in 1769, at Sarre Louis, in the department of the Moselle. He was of humble origin, and, at an early age, entered the military service. From a private hussar, he rose by degrees to the rank of captain, in 1794, when his courage and military skill were observed by general

Kleber, who gave him the command of a corps of 500 men, and, in 1796, appointed him adjutant-general. He soon surpassed the expectations which he had excited, and, in 1796, at the battle of Rednitz, was made general of brigade. Notwithstanding his rank, his impetuous courage often led him to expose his person like a private soldier. He contributed essentially to the victory of Neuwied, in 1797. After a valiant defence, he was taken prisoner at Diernsdorff; and, on his liberation, in 1798, was made general of division. As such, he commanded on the Rhine in 1799, and, by an able diversion at Manheim, contributed to the victory of Massena, at Zurich, over the Russians under general Korsokoff. Ney also distinguished himself under Moreau, particularly at Hohenlinden. In 1802, he was sent ambassador to the Helvetic republic. In 1805, he commanded in the camp at Montreuil, and was appointed by Napoleon marshal of the empire and grand-cross of the legion of honour. He opened the campaign of 1805 against Austria by a brilliant victory at Elchingen (whence he received his title duke of Elchingen), and brought about the capitulation of Ulm. He occupied the Tyrol, and marched on to Carinthia, when he was stopped in his career by the peace of Presburg. In 1806 and 1807, he fought at Jena, and, after the capture of Magdeburg, at Eylau and Friedland. In 1808, he maintained his high reputation in Spain. Napoleon recalled him, but kept him at a distance till the commencement of hostilities against Russia, when he received the chief command of the third division of the imperial forces. At the battle of Moscow, Napoleon gave him the well-deserved title of *le brave des braves* (bravest of the brave). After the burning of Moscow, he led the van of the army, and, by his masterly conduct, prevented its utter destruction. On this occasion, his ability was perhaps more strikingly manifested than at any former period. The emperor made him prince of Moscow, and Alexander confirmed the title on his visit to Paris, in 1814. In the spring of 1813, Ney reorganized the army which had conquered at Lutzen and Bautzen, and marched with it to Berlin; but was met at Dennewitz by Bulow, and defeated. He was now obliged to retire to Torgau, but soon took the field again; chased the Swedes from Dessau, and fought with his wonted valour at Leipsic, where he received a wound, and afterwards at Hanau. When the enemy entered France, he disputed every step of their progress. Brienne, Montmirail, Craonne, and Chalons-sur-Marne are shining names in the history of his battles. When Paris was taken, and the emperor was vacillating, Ney was the first who ventured to suggest to him that the contest would soon assume the character of a civil war, unless it were brought to a speedy termination. Thus he had an important influence upon Napoleon's abdication. After this event, Ney took the oath of allegiance to the king, was made a peer, and received the cross of St Louis and the command of the cuirassiers, dragoons, chasseurs, and light-armed lancers. He enjoyed the most marked distinction at court, and appeared to be entirely devoted to the Bourbons. When Napoleon landed, on his return from Elba, Ney collected a considerable force, was appointed its commander, and, with many assurances of his zeal and fidelity to the king, marched against the invader. But, soon noticing the desertion of his soldiers, and their inclination for Napoleon, he regarded the cause of the Bourbons as lost; and, receiving an invitation from the late emperor, he joined him at Lyons, on the thirteenth of March, and thus opened his way to Paris. In the war of 1815, Napoleon gave him the command of his left wing, which engaged with the British at Quatre-Bras. The charge made by general Gourgaud, from the lips of Napoleon himself, that Ney's conduct in this engagement was the cause of all the disasters of the campaign, has been fully refuted by Gamot, by means of a copy of the written orders which the marshal received on that fatal day. At Waterloo, he led the attack on the enemy's centre, and, after five horses had been killed under him, remained last upon the bloody field. His clothes were full of bullet-holes, and he fought on foot till night, in the midst of the slain. After the defeat, he returned to Paris, where he entered the chamber of peers, and publicly contradicted the assertion of Davoust, the minister of war, that 60,000 men had arrived under the walls of Guise, declaring, in plain terms, that all was lost. On the return of the king, Ney was included in the decree of July 24, 1815. For a considerable time he remained concealed in the castle of a friend at Aurillac, in Upper Auvergne. During an entertainment given by his friend, one of the guests observed a splendid sabre. The account of it reached the ears of the sub-prefect, and it was immediately recognised as the sabre of Ney. The castle was searched, the marshal taken, and imprisoned on the fifth of August. Ney might have escaped with ease, but he was confident of acquittal. He was brought before a court-martial, which declared itself incompetent to take cognizance of his case, on the tenth of November. His trial was therefore referred to the chamber of peers, where the minister, the duke de Richelieu, was eager for his punishment. His advocate was Dupin. The twelfth article of the capitulation of Paris, signed July 3, 1815, promising a general amnesty, was quoted in his favour; but Wellington affirmed that this was not the true construction of the article. Notwithstanding the remonstrances of marshal Davoust, who had made the treaty, and who explained it in favour of Ney, he was sentenced to death on the seventh of December, by 169 votes against seventeen. With the calmness which had distinguished him through the whole trial he listened to the sentence; but when the person who read it came to his title, he interrupted him—"What need of titles now? I am Michel Ney, and soon shall be a handful of dust." When the assistance of a priest was offered him, he replied "I need no priest to teach me how to die; I have learned it in the school of battle." He permitted, however, the curate of St Sulpice to accompany him to the scaffold, and compelled him to enter the carriage first, "You mount before me now, sir, but I shall soonest reach a higher region." On the eighth of December, 1815, at nine o'clock, A. M., he was shot in the garden of Luxemburg. When an attempt was made to blindfold him, he tore away the bandage, and indignantly exclaimed, "Have you forgotten that for twenty-six years I have lived among bullets?" Then, turning to the soldiers, he solemnly declared that he had never been a traitor to his country, and, laying his hand upon his heart, called out, with a steady voice, "Aim true. France forever! Fire!" Marshal Ney left four sons, one of whom has since married the daughter of the famous banker Laffitte.

NIAGARA; a township of Niagara county, New York, on the river of the same name. It embraces Niagara falls and Manchester village. At this village there is a post-office; and it contains a spacious hotel for those who visit the falls.

NIAGARA FALLS are situated on Niagara river, about equidistant between lakes Erie and Ontario. They have already been described in this work, under the article *Cataract*. Whoever notices the structure of the land between the two lakes, must be convinced that the falls have greatly receded from their former position. Lake Erie is 334 feet higher than lake

Ontario. The land does not gradually slope to the northward to make this descent, but stretches in broad plains, and descends by precipices. The last and principal of these abrupt declivities is at Lewiston, eight miles from the cataract; and here must have been the original site of the cataract, although we cannot tell how long ago the river began to cut this vast chasm, nor how long it will require to extend it to lake Erie. The waters of the Niagara are usually frozen over during a part of the winter, except at the falls, and where the rapids are most violent. Then may be seen myriads of wild ducks lighting upon the foaming stream above the falls, and descending on the smooth sheet of the cataract until it reaches its extreme circular verge, at about half its descent; then, taking wing, they wheel round to the same place on the rapids, and again repeat their defiance of the terrors of the cataract.

NIAGARA RIVER, between New York and Upper Canada, runs from lake Erie into lake Ontario, and thus connects the St Lawrence and lake Ontario with the upper lakes. Its length is thirty-six miles; its breadth is from half a mile to seven miles. Several islands are embraced within it. At Black Rock, two miles from lake Erie, the river is three-fourths of a mile wide; and this is its breadth at the falls. It affords a great variety of fish, such as sturgeon, bass, muscanunge, or muscalunga; and salmon-trout are numerous below the falls. The white-fish, weighing from two to five or six pounds, are taken in seines, from October till May. It is a most delicious fish, and is said to be peculiar to this river and the great lakes. From fort Erie, on the Canada shore, at the outlet of lake Erie, to Chippewa (eighteen miles), the bank is from four to ten feet high. From Chippewa to the great fall, two and a half miles along the Canada shore, there is a descent of ninety-two feet, and the bank is from ten to 100 feet high. The river is here so rapid that it is always covered with a white foam. From the cataract to Lewiston is seven miles; and near this place the bank is 310 feet high, composed of strata of soft mud and sand, clay, gypsum, slate, limestone, and a superstratum of earth. From Lewiston to lake Ontario is seven miles, and in this distance the Northern Terrace, or Mountain Ridge, crosses the course of the river. The height of the bank then diminishes to twenty-five or thirty feet. The whole descent of the river, and thus the difference of level between the two lakes, is 334 feet.

NIBELUNGENLIED (i. e., *song of the Nibelungen*); an ancient German epic, little known to English readers, but ranking among the nobler works of imagination. The name *Nibelungenlied* is derived from *Nibelungen*, or *Niflungen*, an ancient and powerful Burgundian tribe, the name of which, in all probability, may also be founded on the ancient mythical ideas of a *Nebelland* (land of mists), in the North. Others derive the name from *Nibullunan* (intrepid); and others still from the *Ghibelines* (q. v.). The subject of this great epic is the dreadful fate of this tribe, caused by the passion of two princely pairs. The one pair is Siegfried, son of king Sigismund of Santen on the Rhine, and Chriemhild, sister to Gunther, king of Burgundy; the other is Gunther and Brunhildis, a heroine of the fabulous North. Siegfried—as noble a hero as ever was depicted—is beloved by Chriemhild. Her brother Gunther is enamoured of Brunhildis of Iceland. But the fair can only be won by force. A successful suitor must conquer her in combat. Gunther promises Siegfried his sister's hand, if he will aid him in gaining Brunhildis. Siegfried conquers the martial maid by means of his magic cap, which makes him invisible, and increases his strength twelve fold, and gives her to Gunther, She afterwards has a struggle with Gunther, in which she overcomes him. Siegfried a second time reduces her to submission, and takes from her her girdle and ring, in which lay her power. These he gives to Chriemhild, who, in a subsequent quarrel with Brunhildis, shows her those trophies of her defeat. Brunhildis resolves on vengeance, and persuades Hagen of Tronege to murder Siegfried, which he effects, with the privity of Gunther. Chriemhild, bent, in her turn, on vengeance, marries the heathen Etzel (Attila, king of the Huns, a mythological personage, who appears in various stories, under several modifications); invites the Burgundians to the court of Etzel; involves them in strife with the Huns, and, after several bloody battles, both parties are destroyed. Gunther and Hagen, the sole survivors, are taken prisoners by Dietrich of Bern, and put to death by Chriemhild. This poem thus becomes most tragical. The closing scene of the tragedy is delineated with unrivalled power by Peter Cornelius (q. v.), in the plate which forms the frontispiece to his engravings illustrative of the Nibelungenlied. The development of character, in the progress of the story, is remarkable. Chriemhild, the lovely mistress of Siegfried, becomes, in the course of the epic, altogether revengeful and implacable. Her thirst for vengeance drives her even to marry a foreigner and heathen, merely to obtain the means of destroying the race of Gunther; and we become somewhat reconciled to Hagen, the murderer of Siegfried, by his inflexible devotion, on all occasions, to the will of his sovereign lady Brunhildis—a devotion which feudal times esteemed so highly. The time in which we find the historical basis of this tragedy is about 430 or 440, A. D.; the scene is on the Rhine, and on the frontiers of Austria and Hungary. The poem of the Nibelungen, after having been long forgotten, appeared again to delight the lovers of true poetry and of German antiquities. It is founded on original *sagas*, variously interwoven with each other, which have come down to us, and of which we find Scandinavian modifications in the *Edda*, the *Wilkinasaga*, and the *Niflungasaga*. It belongs to the same heroic age with the *Heldenbuch* (q. v.). The Nibelungenlied seems to have undergone several remodellings, at different periods. These are generally considered to be four. As the poet who gave it its present shape has not disclosed his name, and as no information exists respecting him, conjectures have been divided as to who he was. From the author's geographical knowledge being most accurate in regard to the south-eastern part of Germany, and from his decided predilection for Hungary, and his dislike towards Bavaria, as well as from his flattery towards the house of Babenburg, A. W. Schlegel is inclined to believe that Klingsohr of Hungary, or Henry of Ofterdingen,—both of whom were present at the great poetical contest at the court of the landgrave Hermann, at Wartburg (q. v.), in 1207,—is the author. The metrical form of this poem is the strophe, of four iambic and trochaic lines, in rhymed couplets, and admitting of the chief accent being put in six different places; also with spondaic, anapestic, and dactylic rhythm, and a female cæsura in the middle. That part of the poem entitled the *Lament* (*Die Klage*) is undoubtedly the production of a later age, and is in a different form. Besides several fragments, there have been preserved six manuscripts of the Nibelungenlied, of which that of St Gall is the oldest. Muller was the first who published the whole poem in his collection. Von der Hagen first gave a translation of the Nibelungenlied, and, in 1810, a critical edition of the original, at Berlin. After this, he published, in Breslau (1820), the Song of the Nibelungen for the first Time in the oldest Form, from the Manuscript of St Gall, with a Comparison of the other Manuscripts. The second edition, with a dictionary and notes, was published at Frankfort on the Maine (1824), in two volumes. To the works on this poem belong Gottling's *Ueber das Geschichtliche im Nibelungenliede* (Rudolstadt, 1814), and his *Nibelungen und Gibellinen* (Rudolstadt, 1816); Charles Lachmann, *Ueber die ursprüngliche Gestalt des Gedichts von der Nibelungen Noth* (Berlin, 1816), and the edition of the poem itself by the same. There is also an edition by Hinsberg; an unsuccessful translation, in prose, by Zeune; a metrical translation, carefully following the original, by Busching (1815); and one by Simrock (Berlin, 1827).—See A. W. von Schlegel's opinion, in the *Deutsches Museum* (i. 67); Mone's *Einleitung in das Nibelungen-Lied* (Heidelberg, 1818); Von der Hagen *Die Nibelungen, ihre Bedeutung für die Gegenwart und immer* (Breslau, 1819); his preface to his edition and translation of the Edda Songs (1817—1814), and of the *Wolsungasaga* (1813—1815).—See also Grimm's *Anmerkungen zu den altdänischen Heldenliedern*, and Müller's *Sagabibliothek*.

German critics speak highly of the Nibelungenlied, and prefer it in many respects to the Iliad. The language of the Iliad is, they admit, superior to that of the Nibelungenlied, both as to the idiom itself and the mastership with which the Greek poet wields it, though the German epic has a childlike and venerable simplicity. On the other hand, they argue, that the plan of the latter is vastly superior to that of the former. It is a great plan, from beginning to end, and embraces a whole event; the Iliad but a part of an event; though we do not deny a unity of plan to the Greek poem, whether this was original, or only the work of a later age, which joined together disconnected rhapsodies. The heroes of the Nibelungenlied deserve the name for their characters, as well as their deeds. Characters are developed in this poem as in a drama of Shakspeare, whilst we find little of this in the Iliad, excepting, perhaps, in the case of Achilles. The difference, too, between the chief heroes of the two poems, is striking. Achilles is a grand, but a wilful and violent character, whilst Siegfried is noble in action, pure in soul, and full of love. In both poems, the chief hero appears but for a short time. The Iliad does not bring him prominently forward till late in the action, while the Nibelungenlied soon removes him from the stage; yet, in both poems, the whole action turns upon this individual. The Iliad celebrates friendship, in the instance of its first hero, as one of the highest blessings of mortals; in the other epic, secondary heroes illustrate the beauty of this connexion. In the former, the world of gods is an essential element of the whole poem; in the latter, this element is entirely wanting. The Iliad abounds in descriptions of scenes and actions; the Nibelungenlied describes but little; yet German painters, of the first rank, justly consider this epic as of a plastic character throughout. The rhyme in the German poem would, of itself, prevent so easy a flow of narrative as distinguishes the Homeric epic; yet it never misleads the German poet into affected point or rounded phrase, such as we so often meet in the more modern poems; for instance, in Tasso. The origin of the whole catastrophe, in both poems, is love; but what a difference is there in the love depicted, and the use made of it, in the two poems! The lover in the Iliad appears like a boy, who is very properly scolded for his impetuosity by his relations. The love of Siegfried is of the noblest kind—the love of a hero. In the Iliad, love soon ceases to be the prominent agent; in the Nibelungenlied, it is throughout the source of the action. The Iliad ends early, and does not even carry us to the death of Achilles, which the poem predicts, in so many passages, as near; nay, for which it prepares us in that charming passage in which Patroclus requests his friend to let the ashes of both repose in the same urn. The poet seems to be afraid of becoming too tragical. The Nibelungenlied exterminates a whole tribe, leaving only a few to mourn the tragic end: and what a scene of mourning! how simple and solemn! Both the poems, with the simplicity of early times, describe the approach of all important events, and the reader is never surprised by unexpected turns; but the interest is not lessened by this. Homer appears individually in his poem much more than the poet of the Nibelungen, as, for instance, in his frequent appeals to the muses for assistance, and in the epithets which he gives to each hero, and which recall to the mind of the reader the idea of an observer and narrator. The German poet never appears himself; he neither gives epithets to his heroes, nor implores heavenly assistance. The great tragedy unfolds without visible intervention. The genius of the poet, or poets of the Homeric songs appears mostly in the narration, the conception of the plan being not remarkable, and the characters having little heroic about them, except the mighty force with which they hurl their spears, and requiring continually the direct interference of the gods. Pallas must take the reins, Apollo interpose his shield, &c. It is therefore the story which delights in Homer. In the Nibelungenlied, the greatness of the poet appears more from the plan, and the masterly manner in which the characters are brought out and sustained, and less in the description and narrative. Yet how full of life, how clear every thing happens before you! If we include, in our comparison, the Odyssey, we may say that both the Greek and the German poets make a grave impression. A whole heroic race perishes in the latter; and, after having read it through, you feel, for a moment, inclined to ask, Why did the world continue to roll on? Such a tragic picture of life leaves a different impression from the Greek poet's dark views of human destiny, as shown, for instance, in Ulysses's visit to the departed. How disheartening is the effect of the scenes of pining discontent which he meets there! a life of labour succeeded by an eternity of gloom. Listen to Achilles's confession in the realm of the dead.

NICANDER, a learned Greek physician and poet at the court of Pergamus, about 160 years B. C., was born, according to some accounts, at Colophon. Two of his poems are still extant—*Theriaca*, upon poisonous animals, and the remedies against their bite; and *Alexipharmaca*, upon antidotes in general. Both are important in natural history. The best editions are those of Gorræus (Paris, 1557, 4to), of Salvinus (Florence, 1764), and of J. G. Schneider (Halle, 1792).

NICARAGUA; one of the states of the Guatimalan confederacy (see *Central America*), lying between the Caribbean sea on the east, and the Pacific on the west, the state of Honduras on the north, and that of Costa Rica on the south. The chief place is Leon, about thirteen miles from the Pacific (32,000 inhabitants), situated on a lake of the same name, which communicates with the lake Nicaragua. The population of the state, in 1824, was about 175,000. The soil is fertile in tropical fruits, cocoa, sugar, indigo, cotton, linen, &c. The country is well wooded, and the forests yield valuable dyewoods and gums. Silver mines, and the gold of the rivers, furnish the inhabitants, who are very ingenious in goldsmith's work, with the materials for their trade.

NICARAGUA, Lake; a large fresh water lake in the state of the same name, 120 miles in length by 41 in breadth, of great depth, and navigable for the largest vessels. It enters the Caribbean sea by the river S. Juan, which is sixty-four miles long, and receives the waters of lake Leon, which is ten miles to the north-west, by a navigable river. The Leon is but thirteen miles from the Pacific, and but five from the river Tosta, which enters that ocean. A union of the two oceans by means of these channels is contemplated.

NICARAGUA WOOD, a kind of dyewood, of a bright red colour, brought from the state of Nicaragua, is thought to be a species of the Cæsalpina, and resembles Brazil wood (*Cæsalpina echinata*) in its properties, but yields a smaller amount of colouring matter.

NICE, or NIZZA; principal town of the county of the same name, belonging to the duchy of Piedmont (1378 square miles, 125,000 inhabitants), situated at the foot of mount Montalbano, not far from the entrance of the Poglione into the Mediterranean. The town has a fortified port, and 19,700 inhabitants, who prepare tobacco, silk thread, liqueurs, perfumery, and essences. The buildings and streets of the new town are fine, whilst the old town has dark, crooked, dirty streets, and dark, misshapen houses. The town and the environs, where also the ruins of a Roman amphitheatre are to be seen, are celebrated for a pure, healthy air, and great mildness of climate, even in the middle of winter, which mildness proceeds from the situation of the northern mountains. These are connected with the Alps, and protect the country from storms. For this reason it is resorted to; the air is so clear, that in good weather the mountains of Corsica are visible. The town has a considerable commerce, particularly in raw spun silk, some oil, and flowers, which, in winter, are sent to Paris, and even to London.

NICE (*Nicæa*), formerly a considerable city of Bithynia, in Asia Minor, of which some ruins yet remain. A part of its former site is now occupied by the small village of Isnik. Nice is celebrated for two ecclesiastical councils held there. The first was convoked by Constantine (q. v.) the Great, in 325, chiefly with the purpose of settling the Arian controversies. His personal influence, and the eloquence of Athanasius (q. v.), obtained the condemnation of Arianism by 318 bishops. (See *Arians.*) Among the twenty canons of this council, the most important is the confession, hence called the *Nicene creed*, based on the Apostles' creed, and, with the Athanasian creed, still received by the larger part of the Christian world. (See *Creed.*) The celebration of Easter on the same day throughout Christendom, and some points of church government, &c., were also regulated by the same council. The proposition to enforce the celibacy of the clergy was rejected, and permission was granted to married clergymen to retain their wives. The second council was convened by the empress Irene in 787, and, in opposition to the iconoclasts (q. v.), determined, that although divine honours were not to be paid to images, they were to be honoured by kissing, genuflexions, incense, and burning of lights. The preservation of relics in the churches was also ordained.

NICENE CREED. See *Creed*, and *Nice*.

NICHE (Italian *nicchia*, a shell); a cavity or hollow place in the thickness of a wall, to place a figure or statue in. Niches are made of all segments under a semicircle; they are sometimes also square. Care must be taken to proportion the niches to the figures, and the pedestals of the figures to the niches.

NICHOLAS, St, bishop of Myra, in Lycia, was born at Patara, and raised to a bishopric by Constantine the Great. He was remarkable for his piety and charity. He was also considered the patron of virgins and of seafaring men. The Dominicans adopted him as their tutelar saint, and the Russians hold his memory in great veneration. He died about 392. Gadshill, in the first part of Henry IV., uses the term *St Nicholas's clerks*, as a cant phrase for highwaymen. Warburton remarks upon this expression, that St Nicholas is the patron of scholars, who are thence called *St Nicholas's clerks*, and as *Nicholas*, or *Old Nick*, is a cant name for the devil, Gadshill equivocally calls robbers *clerks of St Nicholas*. See also his note, to the same effect, on a passage in the Two Gentlemen of Verona (act iii. sc. 1). Grey further remarks, that robbers are called *St Nicholas's knights*.

NICHOLS, John, fellow of the antiquarian societies of London, Edinburgh, and Perth, and for nearly half a century editor of the Gentleman's Magazine, was born at Islington, 1744, and, having received a liberal education, he became at an early age an apprentice to Bowyer, the learned printer. He was subsequently admitted into partnership with his master, on whose death he succeeded to the management of one of the first typographical establishments in London. In 1778 he became coadjutor with David Henry, in the publication of the Gentleman's Magazine; and, on the decease of that gentleman, the duties of editor devolved on Mr Nichols. Among his numerous publications may be mentioned, Anecdotes, literary and biographical, of William Bowyer (1778, 8vo), which formed the basis of his Literary Anecdotes of the Eighteenth Century (9 vols. 8vo), Illustrations of the Literature of the Eighteenth Century (6 vols. 8vo), supplementary to the preceding work; and the History and Antiquities of Leicestershire (folio). He died in 1826.

NICHOLSON, William, an ingenious writer on mathematics, natural philosophy, and chemistry, was born in London in 1758, and went to India, when young, in the maritime service. In 1776 he became agent on the continent for Mr Wedgewood, and afterwards settled in the metropolis as a mathematical teacher. He took out patents for various inventions, and published a Journal of Natural Philosophy, Chemistry, and the Arts, which was continued for several years. His works are principally compilations, but executed with judgment. Among them are an Introduction to Natural Philosophy (1782, 2 vols., 8vo), Dictionary of Chemistry, &c. Mr Joyce (died 1816) is said to have been the principal editor of the Encyclopædia published under the name of Nicholson, who is understood to have had but little concern in the work, except as an occasional contributor.

NICKEL; a metal whose distinct character was suspected by Cronstedt in 1751, and fully ascertained by Bergman in 1775. The ore in which it was first found, and from which it is principally obtained at present, is the *Kupfer nickel*, or sulphuret of nickel, mixed also with arsenic, iron, and cobalt. The pure metal and its preparations are obtained from this mineral, or from the artificial arseniuret called *speiss*, a metallurgic production derived from the roasted ores of cobalt. The most convenient method for obtaining the metal is that in which the speiss is employed, and was suggested by doctor Wollaston. Sulphuric acid is added to the pulverized speiss, and nitric acid, also, at intervals, in the proportion of about one-fourth part; a green solution is formed, and after a subsidence of several hours, the green, supernatant liquid is decanted and evaporated until crystals of sulphate of nickel are deposited: a further evaporation gives a crust of arseniate and sulphate, which is dissolved in water, and agitated by a current of sulphureted hydrogen until precipitation ceases. The fluid is filtered again, and more of the apple-green matter obtained by evaporation, which, when redissolved, becomes opaque, owing to the precipitation of arsenious acid. The fluid is again filtered, evaporated, and suffered to crystallize, when the sulphate of nickel may be relied upon as being entirely pure. This sulphate, being again dissolved, is decomposed by carbonate of soda, and the resulting carbonate, made into balls with oil, and surrounded with charcoal in a crucible, and being heated in a melting furnace for two hours, yields a pure button of nickel. Its colour, in this condition, is between that of silver and tin; and when polished, its lustre is equal to that of platinum. It is malleable, and can be forged into bars when hot, and hammered into plates when cold; specific gravity, when cast, is 8·402, and when forged, 8·66. It is capable of being drawn into very fine wire. It is less fusible than iron. In a covered crucible, some of it is volatilized, and appears in drops on the cover of the crucible. It is attractable by the magnet nearly in the same degree as iron, and becomes itself a magnet by touching, hammering, &c. As nickel does not rust, it has a very great superiority over steel in the construction of a compass. There are two oxides of nickel—the dark ash-gray and the black. If potash be added to the solution of the nitrate or sulphate, and the precipitate dried, we obtain the *protoxide*. It may be regarded as a compound of about 100 metal with 28 oxygen. The *peroxide* was formed by Thénard, by passing chlorine through the protoxide diffused in water: a black insoluble peroxide remains at the bottom. Its colour is a brilliant black. When heated it loses oxygen, and becomes protoxide. *Sulphuret of nickel*, prepared directly from its elements, is of a yellow colour, like iron pyrites, and brittle. It consists of seventy nickel and thirty sulphur. *Chloride of nickel* is prepared by evaporating the muriate to dryness. It is of a yellow green colour, and is a proto-chloride. When calcined in a retort, one portion, of an olive-green colour, remains in the bottom of the vessel, while another sublimes, and crystallizes in small, light, brilliant plates of a gold-yellow colour; these are the *deutochloride*. An *iodide of nickel* may be obtained by heating iodine and nickel in a tube. It is a brown substance; fusible; soluble in water, to which it imparts a light-green colour. The *salts of nickel* possess the following general properties:—They have usually a green colour, and yield a white precipitate with ferroprussiate of potash. Ammonia dissolves the oxide of nickel. Sulphureted hydrogen and infusion of galls occasion no precipitate. The hydrosulphuret of potash throws down a black precipitate. Their composition has been very imperfectly ascertained. The sulphuric and muriatic acids have little action upon nickel. Sulphate of nickel crystallizes very readily. Its primary form is a right square prism. The nitric and nitro-muriatic acids are the most appropriate solvents of nickel. The nitric solution is of a pure green colour. Carbonate of potash throws down from it a pale apple-green precipitate, which, when well washed and dried, is very light. When ammonia is added in excess to a nitric solution of nickel, a blue precipitate is formed, which changes to a purple-red in a few hours, and is converted to an apple-green by an acid. The *alloys* of nickel with other metals are unimportant. With gold, in the ratio of twenty grains to one ounce, nickel, a brass-coloured brittle compound is formed. With iron it unites in every proportion. If nickel prevails, the metal is white, and the ductility and magnetism are equal to that of iron. It does not amalgamate with mercury. Pure nickel being dear and rare, it is entirely unknown in common life, and almost so in the arts. It would undoubtedly be applied to useful purposes if it could be found in sufficient quantity. The *ores* of nickel are not numerous. They consist of *native nickel*, *arsenical nickel*, and *nickel ochre*. Native nickel is found in delicate capillary crystals, of a metallic lustre and brass-yellow colour. According to Arfredson, it consists of 64·35 nickel and 34·26 sulphur. Before the blow-pipe, it melts into a brittle metalllic globule, colours glass of borax violet-blue, and is dissolved in nitric acid without leaving a residue. It occurs at Johanngeorgenstadt in Saxony, Joachimsthal in Bohemia, and in the Westerwald. It has sometimes been called *capillary pyrites*. *Arsenical nickel*, or *kupfer nickel*, occurs reticulated, dendritic and botryoidal, but more commonly massive. Cleavage unknown, imperfect; fracture small conchoidal, uneven; surface smooth; lustre metallic; colour copper-red; streak pale, brownish-black; brittle; hardness above that of fluor; specific gravity 7·65. It consists of nickel 44·20; arsenic 54·72, with small proportions of iron, lead, cobalt, and sulphur. Before the blow-pipe, it melts upon charcoal, and emits an arsenical smell. It chiefly occurs in veins, often accompanied by ores of silver and lead. In undergoing natural decomposition, it is sometimes covered by an apple-green, friable substance, which is called the *nickel ochre*, and which consists of 37·35 oxide of nickel and a little cobalt, of 36·97 arsenic acid, and 24·32 of water. Arsenical nickel is found in veins, at Schneeberg, Freiberg, and several other places in Saxony; also in Bohemia, Thuringia, Hessia, Dauphiny, Cornwall. It has been met with also in the United States, at one locality, Chatham, Connecticut, associated with arsenical cobalt. Mr Dobereiner has observed that the metallic alloy, consisting chiefly of arsenic and nickel, which is obtained from the process of fabricating smalt, often crystallizes in four-sided tabular crystals, and is in every respect similar to arsenical nickel.

NICKOJACK CAVE. See *Cave*.

NICK, Old; the devil. Butler sportively derives this term from Nicholas Machiavelli;

> Nick Machiavel had ne'er a trick
> (Though he gave name to our *Old Nick*)
> But was below the least of these.
> *Hudibras*, p. iii. c. 1. l. 1314.

But it was in use among the English writers before the time of Nick Machiavel, and is derived from our Saxon ancestors, who called the devil *Old Nick*, or, probably, from the northern sea-god, or evil spirit of the waters (*Nicken*).

NICOBAR ISLANDS; a group of nineteen islands in the bay of Bengal, between 6° 45′ and 9° 15′ N. lat., and 93° and 95° E. lon. They yield cocoas, plantains, teak, sassafras, pine-apples. The thick forests and heavy dews render the climate unhealthy for foreigners. The Danes formed a settlement here in 1756, but were obliged to abandon it, on account of the mortality among the colonists.

NICODEMUS; one of the leaders of the Pharisees, who is represented in the gospel as a ruler of the Jews. He went to Jesus by night to receive the instructions of a teacher whom he believed to come from God, and afterwards defended him openly before the Pharisees, and assisted Joseph of Arimathea in paying the last honours to their divine Master. Nicodemus was afterwards deprived of his dignities, driven from the synagogue, and banished from Jerusalem by the Jews. A spurious gospel, called the *Acts*, is ascribed to him.

NICOLAI, Christopher Frederic; a German author and bookseller of some note in the history of German literature, as the founder of the *Allgemeine Deutsche Bibliothek*, which contributed essentially to promote a critical spirit in Germany. Nicolai was born in 1733, in Berlin. His father, a bookseller, educated him strictly. In 1749, he was sent to Frankfort on the Oder, in order to learn the book trade, and, by the greatest industry and economy, was enabled to study several sciences and languages in the then existing university of Frankfort. In 1752, he returned to Berlin, and wrote his Letters on the Present State of Belles-Lettres, in 1756. He soon united with Lessing and Mendelssohn, and the three pursued their labours for the advancement of literature, without submitting to the existing rules of taste. In 1759, supported by other literati, they began their Letters on the most recent German Literature (24 vols., Berlin, 1759 to 1765). In 1765, Nicolai executed his plan of the General German Library—a critical work, which was continued forty years, and had an important influence upon German literature. Nicolai ceased to edit it at the end of the 107th volume, in 1792. The severity of this work, in which the criticisms were written in a cold, prosaic tone, involved him in many disputes; among others, with Wieland, Fichte, Herder, and Lavater. After 1770, he devoted himself to the study of the finances and commerce of Prussia. He published Anecdotes of Frederic the Great and the Persons around him, in six numbers, from 1788 to 1792, which have historical value. His Topographical and Historical Account of Berlin (third edition, Berlin, 1786, 3 vols.) is an excellent work. His novels have little merit, yet his Life and Opinions of Sebaldus Nothanker (fourth edition, 1799), with engravings by Chodowiecki, was translated into French, Danish, Dutch, and Swedish. His journey through Switzerland and Germany—a work containing much statistical information, and written in a bold tone—amounted, in 1796, to twelve volumes. Fichte attacked him in his Frederic Nicolai's Life and strange Opinions, edited by A. W. Schlegel (Tubingen, 1801). Nicolai often misunderstood the direction of the public mind in Germany; and this was the case when that bright star appeared on the horizon of German literature—Goethe. He also attacked Kant's philosophy. In 1791, some causes which violently agitated his mind produced such an effect on his nerves, that for several weeks he appeared to himself continually surrounded with beings, whom he distinctly knew, however, to be mere creations of his imagination. He died in 1811. He wrote many eulogies, and other works not enumerated here, on Freemasonry, the Templars, &c. Gockingk wrote his Life, published in 1820.

NICOLAITANS, according to the general and literal explanation of the passage in the Apocalypse (chap. v. 6), where they are mentioned, and according to the statements of the fathers Irenæus and Clement of Alexandria, were heretics, who extended, in the first century, over Asia Minor and Syria. Nicholas of Antioch, mentioned in the Acts of the Apostles as one of the seven deacons at Jerusalem, is said to have given rise to this sect, by the perversion of his advice to abuse the flesh; i. e., to suppress sensual feelings, which was interpreted by some in a sense directly contrary to his intention. These indulged in pagan sacrifices and the pleasures of sense. This sect, if it really existed, which is doubted by several, soon perished. The Gnostics (q. v.) may have received among them the remains of the sect. The same name was given to the followers of the Anabaptist Nicolai.

NICOLAUS PISANUS, of the city of Pisa; the first true restorer of sculpture and the fine arts in Italy, in the thirteenth century. His principal work, in Bologna, is the Arca di S. Domenico, with fine reliefs. He also ornamented the basilica of St John, erected in Pisa, in 1153, with fine sculpture. He died in 1275. The first period of the history of revived sculpture is dated from his time to that of Donatello. His son John was also an able sculptor (*magister lapidum*). Works of merit executed by him are to be seen in the mausoleum of Benedict XI., and at the altar of the cathedral at Arezzo.

NICOLO, properly NICOLO ISOUARD, one of the most favourite theatrical composers of France, was born at Malta, 1777. His father, who was chamberlain to the grand master, paid great attention to the education of his children, and had several of them brought up in France. Constant de Campion, commander of the order of Malta, placed young Isouard at a school in Paris, where his father intended that he should prepare himself for the navy. His leisure was devoted to the pianoforte. He had already entered the navy as a midshipman, when the commencement of the revolution induced him to return to Malta (1790). Although his father now destined him for the commercial career, he still continued to study music with great success, and even became acquainted with counterpoint. From Malta he went to Palermo, where he spent some years as clerk in a counting-house, and employed his leisure hours in the study of music. He went afterwards to Naples, where he completed his study of the art of composition. The famous Guglielmi instructed him in dramatical composition. He now determined, against the wish of his parents, to devote himself entirely to his favourite art, and wrote his first opera at Florence—*L'Avviso ai Maritati*—the favourable reception of which confirmed him in his determination. However, out of regard to his parents, he published his works under the name of *Nicolò* only, not adding his surname until some time afterwards, in Paris. He next composed the serious opera of *Artaserse*, at Leghorn. The grand master of the order of Malta appointed him organist of the church of the order, after the death of the famous Vincenzo Alfosso, and chapel-master of the order, which situation he held, until, on the arrival of the French in Malta, the order was abolished. He still remained at Malta, where he wrote some small French operas, which were translated into Italian—*Il Tonneliere; L'Improvvisata in Compagna; Il Barbiere di Seviglia.* When the French evacuated Italy, general Vaubois took him to Paris as his private secretary. Here he formed himself on the compositions of Monsigny and Grétry, and connected himself with the dramatic writer Etienne. Both wrote with ease and rapidity. Of all Nicolo's compositions, none was more popular than the opera of *Cendrillon*, which was first produced at Paris, in 1810, and repeated in succession a hundred evenings—a result which is unparalleled in the annals of the *théâtre de l'opéra comique*. This was followed by *Joconde;* and these two operas brought him in 160,000 francs. Amongst his other compositions are *Un Jour à Paris, La Ruse Inutile, L'Intrigue aux Fenêtres, Les Rendez-vous bourgeois*, and the pretty opera of *Jeannot et Colin*. In this light dramatical composition, Isouard is distinguished for the ease and sweetness of his melodies, the fertility of his imagination, and the happy combination of the modern Italian school with the French. He died at Paris, 1818, leaving his opera *Aladin, ou la Lampe Merveilleuse*, unfinished.

NICOMEDES; the name of four kings of Bithynia, the third of whom was engaged with the Romans in the war with Mithridates the Great, king of Pontus. He was intimate with Julius Cæsar when young, which drew upon the latter much censure.

NICOMEDIA; the chief city of Bithynia, named after its founder, Nicomedes the First.

NICOPOLIS (*city of victory*); the name of many ancient cities; of two in Egypt, and two others in

Mœsia and Dacia. One of the most celebrated is that in Epirus, built by Augustus, in commemoration of his victory over Anthony, at Actium, which made him master of the Roman empire. Ruins of this city are still to be seen near Prevesa.

Nicopolis, in Bulgaria, the chief place of a Turkish *sangiacat*, 164 miles west of Adrianople, 276 northwest of Constantinople, with 10,000 inhabitants, was built by Trajan. It lies on the right bank of the Danube, and is a place of considerable strength. Bajazet, the Turkish emperor, gained a victory here over Sigismund, king of Hungary, in 1396. Lat. 43° 45′ N.; lon. 24° 8′ E.

NICOT, John; born in 1530, appointed, by Francis II., French ambassador at the court of Portugal, where he was presented with some seeds of the tobacco plant, which he introduced into France. The botanical term for tobacco (*nicotiana*) is derived from his name.

NICOTINE; a peculiar principle obtained from tobacco. The following process is adopted for obtaining it in a state of purity. Boil twelve pounds of dry tobacco leaves in water acidulated with sulphuric acid; evaporate and treat the extract with alcohol diluted with a ninth part of water; add a little water to the solution, and distil; add hydrate of lime to the aqueous residuum, and redistil. The product being mixed and agitated with ether, the latter is to be poured off, and a fresh portion added. All the ethereous solutions are to be united, and put in contact with muriate of lime, which will take away the water; and the concentrated ethereous solution, being evaporated or distilled, will leave 100 grains of reddish nicotine. It is liquid at 21° Fahrenheit; its odour resembles that of dry tobacco; its taste is very acrid, burning, and durable. It is denser than water, volatilizes in the air, and boils at 417° Fahrenheit. It dissolves in water in all proportions, and the solution has an alkaline reaction. When dissolved in alcohol or ether, and exposed to heat, it does not distil with their vapours. Acids take the nicotine from the ethereous solution, and form salts insoluble in ether. It is eminently poisonous.

NICTITATING MEMBRANE, in comparative anatomy; a thin membrane, chiefly found in the bird and fish kinds, which covers the eyes of these animals, sheltering them from the dust, or from too much light, yet is so thin and pellucid, that they can see pretty well through it.

NIEBELUNGENLIED. See *Nibelungenlied.*

NIEBUHR Carstens, born at Lüdengworth, in the province of Hadeln (Hanover), in 1733, was the son of a peasant, and his youth was passed in the usual manner of a person of his condition in life. A lawsuit having arisen in his native province concerning the superficial area of a farm, no surveyor was to be found in Hadeln, and Niebuhr immediately resolved to apply himself to the art. At the age of twenty-two, he went to Hamburg, for the purpose of studying geometry, and the most indefatigable exertion was hardly sufficient to enable him to follow the lessons of the gymnasium. He then devoted several years to the study of the mathematics at Gottingen. Count Bernstorff, Danish minister, having determined to send a scientific expedition to Arabia, Kastner, professor at Gottingen, recommended Niebuhr as a member of it. A year and a half of preparation were allowed him, and, in 1760, he received the place of lieutenant of engineers in the Danish service. Niebuhr was geographer to the expedition, which sailed in March, 1761, and, after touching at Constantinople, proceeded to Egypt. Here they remained a year, and reached Yemen, their point of destination, in 1762. Both in Egypt and on the journey, Niebuhr made many important astronomical, geographical, and geodesical observations. Within a year, all his companions died (Von Hagen and Forskal in Arabia, Bauernfeind on the passage to India, and Cramer in Bombay), and Niebuhr himself was saved only by his extreme abstemiousness. The whole object of the expedition would have been frustrated, had not Niebuhr, with extraordinary firmness, continued his journey, and taken upon himself the whole duty of the company. In September, 1763, he sailed for Bombay, where he spent fourteen months in arranging his journal, and, in December, 1764, set out on his return over land, through Persia and Turkey. He arrived in Copenhagen in November, 1767, and laid the fruits of his researches before the world in his Description of Arabia (Copenhagen, 1772), and his Travels in Arabia (2 vols., 1774—1778), both of which were published in Danish, and have been translated into English and other languages. He also edited, from Forskal's papers, the *Descriptiones Animalium*, &c. (1775), and the *Flora Ægyptiaco-Arabica* (1776). Great accuracy of observation, and strict veracity give to his accounts a high value, and render them the most trustworthy source of information concerning the countries visited by him. In 1768, he was made captain of engineers; in 1778, secretary of the district of South Ditmarsh, and, in 1809 knight of the order of the Danebrog. In 1802, he was chosen foreign member of the French national institute. He died in 1815.—Niebuhr was remarkably frugal; his moral character was spotless; his manners pure and severe; and he ever appeared disinterested and modest. Nobility, which was offered him, he declined. His celebrated son wrote his life, the substance of which forms the forty-eighth number of the Library of Useful Knowledge.

NIEBUHR, Berthold George, the celebrated historian of Rome, was the son of the preceding. He was born in Copenhagen, Aug. 27, 1776; but, before he had reached his second year, his father (a German) received an appointment in Germany, in South Ditmarsh, whither he took his son. An account of his early education is given in his biography of his father. Intercourse with several distinguished scholars, particularly J. H. Voss, the celebrated translator of Homer, early inspired him with a peculiar love for the classics. His father was intimately acquainted with the famous Büsch, which was the cause of Niebuhr's residence for some time in Hamburg, where he acquainted himself with commercial affairs. Here, also, he was in constant intercourse with Klopstock, who had a great friendship for the youth. From 1793 to 1794, he studied law in the university of Kiel; but his inclination for the classics continued. When nineteen years old, he went to the university of Edinburgh, in order to study the natural sciences under the professors of that institution, then so famous. He remained one year and a half in Edinburgh, and then travelled over England for six months, and obtained an extensive knowledge of the institutions of the country, assisted as he was by a memory of whose power the writer of this article,* in a long residence with Mr Niebuhr, has seen most surprising proofs. When he returned from England, he was appointed private secretary to the Danish minister of finance, in which situation he had an opportunity to examine closely the administration of count

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* Francis Lieber, the editor of the American edition of the 'Conversations Lexicon,' who, when reduced to great distress, on his return from Greece, whither he had gone to support the Greek revolutionary cause, was, though a stranger, generously taken under Niebuhr's roof, at Rome, and treated, during a long residence there, with undeviating kindness. Mr Lieber has recently published a volume containing Reminiscences of Niebuhr, in which the character of the historian and the gratitude of his biographer are both pleasingly and creditably displayed.

A. P. Bernstorff, which, as he himself says, in the biography of his father above-mentioned, affected essentially the direction of his whole life. After a certain time, he was appointed a director of the bank. In 1801, he witnessed the bombardment of Copenhagen. The invasion of Germany (which he always loved as his true country) by the French affected him much; and his translation of the first Philippic of Demosthenes, dedicated to the emperor Alexander, with a remarkable call upon him, prove his sentiments. In 1806, he was taken into the Prussian service; but, soon after his arrival in Berlin, the battle of Jena changed the whole condition of the kingdom. In Konigsberg, whither he had followed the court, he was appointed one of the counsellors who directed public affairs, under Hardenberg, until the peace of Tilsit. He then took an active part in the organization of the Prussian states under the minister Stein. In 1808, he was sent to Holland on a special mission, where he remained fourteen months, during which he always contrived to save some time from his public occupations for study. On his return to Berlin, he was made privy-counsellor of state, and a temporary officer in the department of finances. In 1810, when the university of Berlin was established, his friends persuaded him to deliver his first lectures on Roman history; which were received with such interest by the hearers, and so much commended by men like Buttmann, Heindorf, Spalding, and Savigny, that he published, in 1811 and 1812, the two volumes of his Roman history. When the Prussians rose against the French, he established a journal at Berlin, under the title of the Prussian Correspondent, and, in 1814, was sent again to Holland, to negotiate a loan with Britain. On his return, in the same year, to Berlin, he lost his wife, and, soon after, his father; and, to divert his mind under his losses, he planned the biography of his father, and edited, together with Buttman and Heindorf, the fragments of Fronto, found in Verona by Angelo Maio. In 1816, he married a second time, and was appointed Prussian minister at the papal see; and on his passage through Verona to Rome, he discovered, in the cathedral library of the former city, the Institutions of Gaius. (See *Caius.*) The chief object of his mission was to arrange with the pope the reorganization of the Catholic church in the Prussian dominions, which was finally settled by the Prussian concordate, when prince Hardenberg went to Rome in 1822. The result is the bull *De Salute Animarum.* Pius VII., himself a lover of science, had a great regard for Niebuhr. Even before he went to Italy, his attention had been directed to the importance of the *Codices rescripti* (see *Codex*), and the discovery of Gaius added to his interest in the subject, so that he spent much time in Rome, in an accurate examination of the manuscripts of the Vatican library; but, when Angelo Maio was appointed keeper of the library, a very ill-placed jealousy on his part towards Niebuhr prevented the latter from continuing freely his learned labours, the result of which he made known to the world in his collection of unedited fragments of Cicero and Livy (Rome, 1820); and, at a later period, when a good understanding existed again between Maio and Niebuhr, produced by the disinterested frankness of the latter, he took an active part in Maio's edition of the precious fragments of Cicero's *De Republica.* His residence in Rome gave him an intimate knowledge of the localities of the city, and a clearer conception of its ancient character and history. His knowledge in this branch appears in his essay On the Increase and Decline of Ancient, and the Restoration of Modern, Rome, which is printed in the first volume of the Description of Rome, by Bunsen and Plattner. It is also published in his Minor Works. In this period he also wrote some Latin treatises in the *Atti dell' Accademia di Archeologia*, on the Greek inscriptions brought by Gau from Nubia, and a German treatise on the age of Curtius and Petronius, in the Transactions of the Academy of Berlin. In 1823 he left Rome, and, before his return to Germany, went to Naples, where he devoted some hours every day to the collation of the best manuscript of the grammarian Charisius in the library of that city. In Switzerland, he remained six weeks in St Gall, examining laboriously the manuscripts of the library; and, if he expected more than he actually found, he at least discovered some remains of the latest Roman poetry, that is, poems of Merobaudes. He settled in Bonn, where the Prussian government had established a university. He wrote here, in the winter of 1823—1824, that portion which is finished of the third volume of his history of Rome. He was appointed a member of the council of state, whose sessions he attended at Berlin. After his return to Bonn, he determined to remodel the two first volumes of his Roman history before publishing the third, as further researches had changed his views in many respects. He now also began to lecture again, and the fees paid for attendance he devoted to prizes for scientific questions, or to the support of poor students. Volume i. (2d ed.) appeared in 1827, and was so well received that the third edition appeared in 1828. The second volume was, in its new state, finished only a few months before his death; and, in the preface, he says that the melancholy influence of recent political events upon his mind appears in the mode of the execution of the concluding part of the work. That part of the third volume which he had finished, and which carries the history of Rome from the Licinian law to the last quarter of the fifth century, will probably soon appear. Niebuhr's activity was great. Every scholar will easily perceive in his history the extensive and unremitted labour which it required; and, towards the close of his life, he added to his other occupations the task of preparing a new edition of the Byzantine Historians. He himself made the beginning with a critical edition of Agathias, and obtained active collaborators, while he superintended the execution of his plan. At the same time, he made a collection of his treatises in the Transactions of the Academy of Berlin, and in the Rhenish Museum, which he had edited, together with professor Brandes, since 1827. His reputation is spread over Europe, and in America he is equally honoured. He died, January 2, 1831, at a period of his life which afforded reason for expecting much from him. His wife died on the 11th of the same month. The task of confining articles within the limits required by a work like the present, often difficult, is, on the present occasion, painful, from the necessity of repressing the utterance of gratitude for numerous benefits, and of admiration for a man whose integrity, benevolence, and frankness of spirit, are deeply impressed on the mind of the writer, from a long residence under his roof.

NIEDER (German for *lower*) forms part of many geographical names.

NIEDERRHEIN. See *Rhine, Lower.*

NIELLO (*Italian*); a species of work used among the Romans and modern Italians, somewhat resembling Damascus work, and performed by enchasing a mixture of silver and lead into cavities and holes cut in all sorts of hard wood and metals. This art was denominated by the ancients *nigellum*, and was used by them to decorate a great variety of things, and more especially *candelabra.* It was practised by the jewellers and goldsmiths, and flourished chiefly in the fifteenth century. See Duchene's *Essai sur les Nielles*, Paris, 1826, with plates.

NIEMEN (in German, *Memel*); a large river of Lithuania, which rises in the Russian province of Grodno, near Slonim, and divides, eight miles below Tilsit, into two branches, called the *Russ* and the *New Gilge*, which form the Tilsit plain, celebrated for its fertility, and empty into the Curische-Haff. The Tilsit plain suffered severely from an inundation in 1829, by which the river dikes were much injured. The Niemen is navigable in summer, and facilitates the commerce of Memel and Konigsberg. The meeting of Napoleon with the emperor Alexander and Frederic William, king of Prussia, which took place on a raft in this river, in 1807, gives it an historical celebrity.

NIEMEYER, Augustus Hermann, a German theologian and miscellaneous writer, was born Sept. 1, 1754, at Halle, where he studied theology. In 1780, he was appointed *professor extraordinarius* of theology in the university of his native city; in 1784, *professor ordinarius*, and inspector of the royal *pædagogium*. He received a number of appointments, which gradually enlarged the sphere of his activity; and, in 1808, he was made member of the estates of the kingdom of Westphalia, chancellor, and *rector perpetuus* of the university. In 1813 the university was abolished by Napoleon; but, when the Prussian government restored it he was reappointed. He soon laid down this office, but occupied several other places connected with education. Besides a number of sermons, treatises, and translations, he has published the following works, all in German: Characteristics of the Bible; Philotas, or Consolations for the Suffering and the Friends of the Suffering; Timotheus, for the Awakening and Promotion of Piety in thinking Christians; Popular and Practical Theology; Letters to Christian Teachers of Religion; Teacher's Manual (Halle, 1802); Views of German School Instruction, and its History in the eighteenth Century (Halle, 1801); Principles of Education and Instruction for Parents, Tutors, and Teachers (7th ed., 1819, 3 vols.); Original Passages of Greek and Roman Classics on the Theory of Education (Halle and Berlin, 1813); the Book of Religion, and Hymns for higher Schools; Leisure Hours during the War; Religious Poems (Halle and Berlin, 1814.) In 1820, he made a journey to England, which he has described in his Observations in Travelling (1822, 2 vols.) The third and fourth volumes describe a former journey to Holland and France. April 18, 1827, the university of Halle celebrated the fiftieth anniversary of his reception of the degree of master of arts; and the king, on that day, presented the university with 40,000 Prussian dollars for the erection of a building, for which Niemeyer had petitioned. He died at Halle in 1828.

NIERENSTEINER, or NIERSTEINER; a Rhenish wine, which grows near Nierenstein, a village on the left bank of the Rhine, in the grand-duchy of Darmstadt, three leagues S. S. E. of Mayence. It has 2080 inhabitants. See *Rhenish Wines*.

NIEVRE. See *Department*.

NIFLHEIM. See *Northern Mythology*.

NIGER; a large river of the central part of Africa, which has been rendered celebrated on account of our ignorance of its course and termination, and the various theories which have been formed relative to them. Notwithstanding the opinion of some writers, that the Niger of the moderns was known to Ptolemy, and even to Herodotus, it appears evident that nothing was known, by the ancients, of the central region of Africa, and that the streams referred to by those authors were in the more northern parts of that continent. Mungo Park (q. v.) reached the banks of the Niger, at Sego, in the kingdom of Bambarra (July 22, 1796), and determined the direction of its course to be eastward, and not to the west, as had been commonly supposed. He traced its course upward to Bammakoo, and downward to Silla. On his second expedition (1805), he embarked at Sansanding, with the intention of descending the river to its mouth; but, on reaching Boussa, was attacked by the natives, and killed. It was thus ascertained that the Niger rises in the western part of Africa (10°—12° N. lat.), near the sources of the Senegal, and, after an easterly course of several hundred miles, runs in a southerly direction. Different opinions were entertained in regard to its termination. Some supposed it to flow into the Nile; others, into a great central lake: some maintained that it was lost in the sands; and others, that it emptied into the gulf of Guinea, or that the Congo, farther to the south, was its mouth. Numerous attempts were made, by the British government, to resolve the question, but with little success, until the expedition of 1821, under Denham and Clapperton (q. v.). They discovered lake Tchad (lon. 13° E.) and, on visiting Soccatoo (6° 10′ E.), found that the Niger there flowed to the south, under the name of the Quorra. Its termination, however, was yet undetermined. In 1825, Clapperton again set out on a tour of discovery, and crossed the Niger at Boussa. On this expedition, he was accompanied by his servant, Richard Lander (q. v.), who, after the death of his master, attempted to descend the Niger from Fundah, but was prevented by the jealousy of the government. In 1830, Richard Lander set out from Badagry, with his brother John, for the purpose of following down the course of the river to its mouth. They reached the river at Boussa, from thence ascended to Youri and the Cubbie, which comes from Soccatoo. They then descended the river, which flows nearly south from Boussa, and which, after receiving the Shary, expands into a large lake, and thence empties, by several arms, into the Bight of Benin. The mouth by which they reached the sea, is laid down on the maps as the river Nun. Thus from Park's first point, in 1805, its course is traced for 2000 miles, a considerable part of which is navigable for steamboats, through a rich and populous country, the inhabitants of which have made considerable progress in civilization. The river, in the upper part of its course, is known to the natives as the Joliba; in the lower, as the Quorra; the name *Niger* was erroneously applied to it by the Europeans, on the supposition that it was the river spoken of by Ptolemy.

NIGHT. (For the division of the twenty-four hours into day and night, see *Day*.) As a telluric phenomenon, night is of the greatest interest. The sleep which it brings to most organic creatures; the life to which others awake with it; the increase of feverish symptoms on its arrival; and many other phenomena, are of the highest interest.[*]

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[*] One of the most interesting of these is the greater clearness with which distant sounds are heard during night. This fact, which had been observed by the ancients, and in large cities, or their vicinity, was commonly ascribed to the repose of animated beings. When Humboldt first heard the noise of the great cataracts of the Orinoco, in the plain which surrounds the Mission of the Apures, his attention was particularly directed to this curious fact, and he was of opinion that the noise was three times louder at night than during the day. As the humming of insects was much greater at night than during the day, and as the breeze which might have agitated the leaves of the trees never rose till after sunset, this eminent traveller was compelled to seek for another cause of the phenomenon. In a hot day, when warm currents of air ascend from the heated ground, and mix with the cold air above, of a different density, the transparency of the air is so much affected, that every object seen through it appears to be in motion, just as when we look at any object over a fire or the flame of a candle. The air is, therefore, during the day, a mixed medium, in which the sounds are reflected and scat-

In mythology, Night (Latin, *nox;* Greek, νύξ) is daughter of Chaos, and sister to Erebus, by whom she became the mother of Day and Ether. Every thing unknown, dark, horrid, and awful, belongs to her progeny,—Death, Sleep, Dreams, Sickness, and Plague, Discord, War, Murder, Deceit, &c. The Hesperides, also, were called her daughters. According to the Orphic poems, she was also the goddess of love. Modern mythology represents her as mounted on a chariot, and covered with a veil bespangled with stars. Occasionally two children are depicted as held under her arms; the one black, representing the principle of death; the other white, to indicate the innocence and refreshing nature of sleep. Some of the modern artists have depicted her as a woman veiled in mourning habiliments, crowned with poppies, and borne on a chariot drawn by bats and owls. One of the finest representations of Night is a bass-relief of Thorwaldsen: a corresponding piece represents Day. It is one of the loveliest and happiest productions of that great artist.

NIGHT-BLINDNESS; a disease in which the eyes require the full light of day to see. Persons afflicted with this disease cannot see at all, or see very imperfectly, by candlelight, or moonlight. The medical name of this disease is *hemeralopia* (from ἡμερα, day, and ὀπτομαι, to see.) Heber says it is very common in India.—*Nyctolopia* (from νυξ, night, and ὀπτομαι, to see), a disease in which the patient sees little or nothing by daylight, but sees better than others in the dark, is sometimes improperly called *night-blindness.*

NIGHT-BLOOMING CEREUS. See *Cactus.*

NIGHT-HAWK (*caprimulgus Americanus*). The night-hawk, which is also called a *bat* in some of the Southern States, is universally known in the United States. It commonly appears in Pennsylvania about the latter end of April, and is to be seen towards evening, in pursuit of its prey, which consists of beetles and other large insects. The female begins to lay about the middle of May. She makes no nest, depositing her eggs on the bare ground, though always in a dry situation. The eggs are usually two in number, rather oblong, equally thick at both ends, of a dirty bluish-white, marked with numerous blotches of dark olive brown. Like the goat-sucker of Europe, the night-hawk always sits lengthwise on the branch on which it roosts, and not across it, like other birds. When incubation commences, the male keeps a vigilant watch around. When the young are first hatched, they are covered with a down of a pale-brownish colour. The night-hawk is a bird of strong and vigorous flight, and great expanse of wing. It often visits cities, darting and uttering its peculiar squeak over the streets at a great height, diving down perpendicularly, and producing a hollow sound, which has been aptly compared to blowing strongly into the bung-hole of an empty hogshead. When the weather is wet and gloomy, these birds are to be seen abroad at all times of the day, though their usual time of appearance is from two hours before sunset till dark. When wounded, they attempt to intimidate by opening their mouth to its utmost stretch, throwing the head forwards, uttering a kind of guttural, whizzing noise, and striking violently with their wings. They begin to go south about the middle of August, and, by the middle of September, few are to be seen in Pennsylvania. The night-hawk is nine and a half inches in length, and twenty-three in extent; the upper parts are of a very deep blackish-brown, thickly sprinkled with minute spots, and streaks of a pale cream colour, on the back and head. The tail is somewhat shorter than the wings when shut, and is forked; the mouth is large, and has no bristles about it. The night-hawk bears some resemblance to the two other species of *caprimulgus* which are found in the United States—the chuck-wills-widow and whip-poor-will (q. v.) See Wilson, *Ornithol.*, v. p. 65.

NIGHTINGALE (*motacilla luscinia*). This small bird, which is so celebrated for its vocal powers, has but little to recommend it in the beauty of its plumage. The upper part of its body is of a rusty brown, tinged with olive; the under parts are of a pale ash colour, almost white at the throat and belly. It is about six inches in length. The nightingale is a bird of passage, appearing in Europe about the beginning of April, and leaving it early in the autumn. It is solitary in its habits, never associating in flocks, like most of the smaller birds. The female builds in low bushes or hedges, near water, and lays from four to five olive-green eggs. This bird perhaps owes some of its fame to the circumstance of its singing during the evening and night, when every sound is heard to advantage, and has a powerful effect on the imagination. But it is not to its power of song alone that this bird is indebted for its celebrity; wonderful stories are told of its oratorical talents. Gesner gravely relates that two, kept at Ratisbon, spent whole nights in discoursing on politics; and Pliny states that Germanicus and Drusus educated one so perfectly, that it delivered speeches both in Latin and Greek. The proper food for nightingales is spiders, wood-lice, ant eggs, flies, and worms. They are subject to various diseases, for which, according to some bird fanciers, the best antidote or preventive is, to give a black spider, every day for six days, in the month of March.

NIGHTMARE. See *Incubus.*

NIGHTSHADE (*solanum nigrum*); a common weed in waste places. The stem is eight or ten inches high, and is furnished with oval and more or less angular leaves. The flowers are small, white, scattered here and there upon the branches, in bunches of five or six, and are succeeded by small black berries. It possesses narcotic properties, though not so dangerous as was once supposed, and was formerly much employed in medicine, but at present is only used for external applications. The bitter-sweet (*S. dulcimara*) is also sometimes called *nightshade.* The stem is woody, and divides at base into several long, flexuous branches, which twine round and support themselves upon the surrounding plants. The leaves are, some of them, oval-lanceolate and entire, and others with two lateral lobes at the base. The flowers are larger than those of the preceding, of a fine violet colour, and are disposed in corymbs along the branches. The fruit consists of ovoid, bright red berries, which, for a long time, were supposed poisonous: lately, however, they have been administered to various animals in large quantities,

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tered in passing through streams of air of different densities, as in the experiment of mixing atmospheric air and hydrogen. At midnight, on the contrary, when the air is transparent, and of uniform density, as may be seen by the brilliancy and number of the stars, the slightest sound reaches the ear without interruption. M. Chladni has illustrated the effect of mixed medium by an elegant experiment of easy repetition. If we pour sparkling Champaigne into a tall glass till it is half full, the glass cannot be made to ring by a stroke upon its edge, but admits a dull, disagreeable, and puffy sound. This effect continues as long as the effervescence lasts, and while the wine is filled with air-bubbles. But as the effervescence subsides, the sound becomes clearer and clearer, till, at last, the glass rings as usual, when the air-bubbles have disappeared. By reproducing the effervescence, the sound is deadened as before. The same experiment may be made with effervescing malt liquors, and with still more effect by putting a piece of sponge, or a little wool or tow, into a tumbler of water. The cause of the result obtained by M. Chladni is, that the glass and the contained liquor, in order to give a musical tone, must vibrate regularly in unison as a system; and if any considerable part of a system is unsusceptible of regular vibration, the whole must be so. Baron Humboldt has employed this interesting experiment to illustrate and explain the phenomenon of distant sounds being more distinctly heard during the night.

without producing any deleterious effects. The deadly-nightshade (*atropa belladonna*) is, on the other hand, a dangerous plant, and frequently produces fatal effects, where it grows abundantly in waste places. The stem is about three feet high, a little hairy, herbaceous, and branching. The leaves are large, oval, acute, and softly pubescent. The flowers are solitary, bell-shaped, and of a dull purple colour. They are succeeded by black berries, which are so much the more dangerous, as their taste is sweetish and rather agreeable. The extract, dissolved in water and applied to the eye, possesses the remarkable property of dilating the pupil, and is, in consequence, employed in surgical operations for that purpose. The plant belongs to the *solanaceæ*, the same natural family with the preceding.

NIGRINE. See *Titanium*.

NIGRITIA, SOUDAN, or TAKROUR; a general name for the interior parts of Africa, some portions of which are yet unknown, and some have been only recently explored by Clapperton, Caillé, Lander, &c. It contains a great number of kingdoms, or countries, among which are Bambarra, Timbuctoo, and Kong on the west; Houssa, Borgou, Yarriba, Nyffe, Funda, Bournou, Mandara, Begharmi, and Kanem in the centre; Bergoo, Darfur, Kordofan, Donga, and the country of the Shillooks, to the east. It lies between 6° and 17° N. lat., and 8° W. and 32° E. lon. It is bounded on the north by Sahara, on the east by Nubia, on the south by the Mountains of the Moon and Lower Guinea, and on the west by Senegambia. As thus described, it is about 2500 miles from west to east, 500 from north to south, with a superficial area of 1,250,000. It contains some lofty mountains; some of the summits of the Mountains of the Moon being covered with perpetual snow; the Kong range is in the south-western part of the country. In the centre is lake Tchad, into which the Yeou and the Shary, two large rivers from the south-west, empty themselves; the north-eastern borders of the lake have not been examined. The Niger (q. v.) rises in the western part of Nigritia, and, after an easterly course, flows south into the gulf of Guinea. During eight or nine months, the heat is very great. In the rainy season (from June to September), the country is covered with a most luxuriant vegetation. The soil, in general, is fertile, producing maize, rice, millet, cotton, hemp, melons, indigo, dates, the gooroo, or Soudan, nut, &c. The gigantic baobab, the butter-tree, various resinous trees, &c., are found in the forests. Camels, dromedaries, asses, horses, sheep, goats, and horned cattle are numerous. Lions, leopards, hyænas, wolves, jackals, rhinoceroses, elephants, giraffes, monkeys, crocodiles, &c., are found in the woods or rivers. A great portion of the country being populous, we may suppose it to contain about 20,000,000 inhabitants. They are more advanced in civilization than the negroes of the coast, to whom our knowledge has, till lately, been principally confined. They exercise some of the mechanical arts with skill, and an important commerce is carried on with the Barbary states, Egypt, and Nubia, by Moorish merchants, in caravans. Slaves, ivory, gum, ostrich feathers, &c., are the most considerable articles of export. The discovery of a great navigable river, running through the heart of the country, and accessible to Europeans from the sea, must have a most important influence on the condition of this country. Park, Clapperton, and Caillé have furnished us with nearly all the information which we possess concerning these regions, which were but indistinctly known to the ancients under the general name of *Ethiopia*. The Journal of the Landers gives some further materials relating to the south-western part.

NIHIL ALBUM; a name formerly given to the white oxide of zinc.

NILE; a large river of Africa, which flows through Nubia and Egypt. Below Cairo, where it is 1000 yards wide, it divides into two main branches, which again separate into several arms, the extreme eastern and western of which give to the lower part of Egypt the form of a delta (q. v.). There were anciently reckoned seven principal mouths by which its waters were poured into the Mediterranean; only those of Damietta and Rosetta are at present navigable; the others have been choked up. The sources of the Nile have never been accurately determined. Among the Greeks and Romans, this river excited the greatest interest; from its being the largest known to them, from its inundation, of which they had no other examples, and were ignorant of the cause, and from its unknown origin. The name *Nile*, according to Spineto (*Lectures on Hieroglyphics*), is Greek; the Egyptians calling it merely *Iaro*, which means *river*. The true Nile is formed by the confluence of the *Bahr-el-Abiad* (white river) and the *Bahr-el-Azrek* (blue river), in lat. 15° 40′ N. The former, rising in Abyssinia, to the south-west of lake Dembea, comes from the south-east, and was considered by Bruce as the Nile. The latter, however, which comes from the south-west, and is supposed to rise in the Mountains of the Moon, brings down the greatest mass of water, and is considered by Cailliaud as the true Nile. (See *Meroe*.) This is a mere dispute about words. In lat. 17° 40′, it receives the Tacazze from the east, enters Egypt in 24°, following nearly a northern course, and below Cairo (30° 15′ N.) divides into the two main arms above-mentioned, the Damietta, or the eastern, and the Rosetta, or western branch. The distance from the confluence of its two head branches to the sea is about 1500 miles; from its highest sources, probably not far from 2500 miles. The cataracts so much celebrated by the ancients, modern discoveries have shown to be insignificant; they appear to be hardly any thing more than what in America are called *rapids*. In Upper Egypt, it is confined between two ranges of mountains, which leave only a narrow strip on each side of the river. Near Cairo, the river valley widens, and the level nature of the country below allows it to spread itself over a wide plain. The seven mouths were called, by the ancients, the *Canopic*, the most western (probably to lake Edko or Mareotis), the *Bolbitic* (the Rosetta branch), the *Sebennitic* (probably terminating in lake Bourlos), the *Phatnitic* or *Bucolic* (now the Damietta branch), the *Tanitic*, the *Mendesian*, and the *Pelusiac* (the most easterly), which entered the sea at different points of what is now lake Mewzaleh. In Upper and Middle Egypt, there are great numbers of canals on the left bank of the river, which serve to irrigate the country: the principal, called the *canal of Joseph*, communicates with lake Mœris. (q. v.) The inundations of the Nile are owing to periodical rains, which fall to the south of the seventeenth degree. They begin in March, but have no effect upon the river until three months later. Towards the end of June, it begins to rise, and continues rising at the rate of about four inches a day, until the end of September, when it falls for about the same period of time. Herodotus informs us that, in his time, a rise of sixteen cubits was sufficient to water the country: at present, twenty-two cubits are considered a good rise. A rise of twenty-six cubits, in 1829, destroyed a great many villages, with their inhabitants. The lower part of Egypt has, therefore, been very much raised since the time of Herodotus, by the accumulated deposits of rich slime brought down by the river. (See *Egypt*.) This mud, which is composed principally of argillaceous earth and carbonate of lime, serves to fertilize the overflowed lands, and is used for manure for such places as are not sufficiently saturated by the river: it is also formed into bricks, and various vessels for domestic use, &c. The present pacha (see *Mohammed Ali*) has opened many of the old canals, which had been closed for centuries, and dug new ones: among the latter, the canal of Mahmood, connecting the harbour of Alexandria with the Nile, near Fouah, forty-eight miles long, ninety feet broad, and eighteen deep, is a magnificent work. Among the animals with which the Nile abounds, the most remarkable are the crocodile and the hippopotamus. In the ancient Egyptian mythology, the Nile was revered as the tutelary deity of the country. The Greeks make him the son of Pontus and Thalassa, or of Oceanus and Tethys. Memphis is said to have been his daughter. When the waters began to rise, the inhabitants celebrated the festivals called *Niloa*, sacrificed a black bull to him, strewed lotus flowers on the water, &c. In the city of Nilopolis, a temple was erected to him. His attributes are the crocodile, the sphinx, the hippopotamus, and the dolphin. The Nile has been personified in several statues, particularly in a very noble one of black marble, now in the Vatican. He is distinguished by his large cornucopia, by the sphinx couched under him, and by the sixteen little children playing around him. By the sixteen little children are understood the several risings of the river every year, as far as to sixteen cubits. The black marble is said to be in allusion to the Nile's coming from Ethiopia. The water flows down from under his robe, which conceals his urn, to denote that the head of the river was impenetrable. In some modern statues, the head of this figure is quite hidden under his robe for the same reason. An instrument, called a *nilometer*, was constructed by the ancient Egyptians, consisting of a rod or pillar, marked with the necessary divisions, for the purpose of ascertaining the proportionate increases of the flood of the Nile. It is said by several Arabian writers to have been first set up by Joseph during his regency in Egypt. The measure of it was sixteen cubits.

NILOMETER. See *Nile*.

NIMBUS, or GLORY; the halo, or collection of rays surrounding, in ancient times, the heads of certain deities, kings, and emperors, and, since the establishment of Christianity, the heads of Christ and the saints. Some have attributed the origin of the custom to the practice, in the Roman triumphs, of placing a common round shield over the head of the triumphant leader, and have supposed that the coverings which protected the heads of the statues of the gods from filth and dust, were called by the same name, and that these rays were at first added for ornament, whence sprung afterwards the real halo, or glory. But it is probable, from the numerous legends in which holy children are described with glories, that they owe their origin to an ancient Oriental symbol.—*Nimbus* is the Latin for *cloud*. See *Clouds*.

NIMEGUEN (anciently *Noviomagus*); a strong city in the Dutch province of Guelderland, delightfully situated on a steep hill, reaching down to the Waal; lat. 51° 51′ N.; lon. 32° 46′ E.; population 13,325. Most of the streets are narrow and dark. The principal of the nine churches is a handsome building. On a height near the river are seen the ruins of an old tower, said to have been built by Charlemagne. The town house contains a rich collection of Roman antiquities. The Belvedere, a high tower, from which there is a most extensive view, is near the beautiful public walk, the *Kalverbosch*. The pale beer (*Moll*) of Nimeguen is famous. Nimeguen is celebrated for two treaties of peace, concluded in 1678, between Spain, France, and Holland, and, in 1679, between Germany and Sweden.

NIMES, or NISMES (*Nemausus*); a city of France, capital of the department of the Gard; lat. 43° 50′ N.; lon. 4° 21′ E.; 350 miles south-east of Paris; episcopal see, and the seat of several departmental authorities. It is situated in a delightful plain, and is surrounded with *boulevards*, which occupy the place of the former fortifications. It contains some handsome public buildings, among which are the *palais-de-justice*, an hospital, and cathedral. The public walks are magnificent. The population is 39,068, of which a great number are Calvinists. The inhabitants are principally employed in manufactures, chiefly of silk and cotton. It has considerable commerce in wine, oil, essences, drugs, dye-stuffs, &c. Nimes, next to Rome, contains the greatest number of monuments of Roman grandeur: among them are the square house (*maison carrée*), an ancient temple, built by Adrian, seventy-six feet long, thirty-eight broad, and forty-two high, with thirty beautiful Corinthian columns (it was repaired by Louis XIV., and again in 1820); the amphitheatre, a noble circus of the Doric order, the walls of which, composed of enormous masses of stone, united with admirable skill, and about 1200 feet in circumference, are in good preservation; the beautiful fountain of Diana, with its baths and trees; the temple of Diana, in ruins; and the ancient tower *Magne*, on a hill outside of the city, the original destination of which is unknown. Very fine mosaics have been found here, and numerous fragments of ancient buildings, with Greek and Latin inscriptions. Nimes is supposed to have been built by a Greek colony, and was afterwards, for about 500 years, in the possession of the Romans. In the sixteenth century it became a stronghold of Calvinism (see *Huguenots*), and suffered much during the civil wars. In 1815 (see *France*), it was the scene of religious violence in consequence of the reaction of that period. See Millin's *Voyage dans les Départements du Midi;* Menard's *Histoire des Antiquités de Nimes* (1822).

NIMROD; a valiant warrior, who, according to the Mosaic account, lived before 2000 B. C., and is generally supposed to have been the first conqueror who substituted the monarchical yoke for the patriarchal independency of the nomadic tribes. Babylon and the monarchy of Nimrod were founded by him, and enlarged by the conquest of the towns (fortified tribes) of Erech (afterwards Edessa), Acad (afterwards Nisibis), and Calneh (afterwards Ctesiphon, in Mesopotamia). Herder calls him the builder of the tower of Babel, and considers the representation of him, as a powerful hunter, merely a figurative designation of the tyranny and artifice by which he subjected and united the wild nomadic tribes.

Nimrod, in Chaldaic and Arabic, signifies a *rebel*.

NINE; used by the English poets for the *Muses* (q. v.), on account of their number.

NINEVEH. See *Ninus*.

NINON DE L'ENCLOS. See *L'Enclos*.

NINTH, in music; an interval containing an octave and a tone; also a name given to the chord, consisting of a common chord, with the eighth advanced one note.

NINUS was, according to an uncertain tradition, an Assyrian king, the successor of Belus, and one of the greatest conquerors in Asia. He extended the Assyrian kingdom to the borders of India, to the Nile and the Tanais, married Semiramis, the wife of Medon, one of his generals, who had assisted him, by stratagem, in the conquest of Bactra, the capital city of the Bactrians, and built Nineveh, the capital of his own kingdom, which, according to Niebuhr, is situated on the east side of the Tigris, opposite Mosul. His son was Ninyas. His kingdom is considered as having been founded between 2000 and 2100 years B. C.

NIOBE, daughter of Tantalus (king of Lydia) and of Dione, or Euryanassa, was the wife of Amphion, who, in common with Zethus, governed Thebes, which they had built. According to the common accounts, she had seven sons and seven daughters, and, proud of her blooming offspring, she so far forgot herself as to exalt herself above Latona, the mother of only two children—Apollo and Diana; and in punishment of her presumption, she had to witness the destruction of her children by the arrows of the twin deities. Anguish and despair transformed the wretched mother, after long wanderings, into a stone, which was shown on mount Sipylus, in the kingdom of her father. Amphion and Zethus also fell, pierced by the arrows of Apollo, when, full of wrath, they penetrated into the sanctuary of the god. This is the most common account of the fate of Niobe, in the circumstances of which poets frequently differ, who have taken this story for a subject as often as artists. The origin of the fable seems to lie in the ancient figure of speech, by which it was said of young people who died suddenly, that they had been struck with the arrows of Apollo or Diana; and, in almost all languages, petrifaction is the natural image of the highest degree of torpid despair. One of the most beautiful exhibitions of ancient art is contained in the group of Niobe. The statues forming this group were dug up in 1583, near the Porta Lateranensis, in Rome, were purchased by the cardinal Ferdinand de' Medici, who caused them to be placed in the villa Medici, and, in 1772, were conveyed to Florence by the grand-duke Leopold, where, in 1777, they were placed in the Rotunda la Tribuna, after their restoration by Vincenzo Spinazzi. The group consists of fourteen statues, and is considered to be the one described by Pliny. Respecting its author nothing certain was, even in his time, known; some, with Pliny, attributed it to Scopas; others, to Praxiteles: Winkelmann declared himself for Scopas. Equally ignorant are we respecting the original combination of the single figures. It has hitherto been the more difficult to form an opinion, inasmuch as several of them, the "two wrestlers," as they are termed, the pedagogue (whom Fabroni takes for king Amphion), and one of the daughters (whom Goethe thinks an Erato), have been pronounced by the best connoisseurs not to belong to this group, although they were all found in one place and at the same time. The British architect Cockerell, in an essay, in 1816, proposed the conjecture that these celebrated statues were arranged on a line pyramidally, and constituted the ornaments of the front of some ancient temple; and it is well known that the Greek architects were fond of decorating the fronts of their temples in such a manner. The supposition is corroborated by the examinations which the British artist himself made of the single statues. Their heights, diminishing on both sides so as to form the sides of a triangle; their attitudes, perfectly adapted to such a situation; all of them pressing towards the centre, formed by the mother as the highest statue; and then the remarkable neglect, and even intentionally imperfect workmanship of the back of most of these statues, which evidently shows that the artist had thought only of the effect produced by a front view of his work, destined for exhibition on a wall;—all these considerations make it probable that this group was designed for such an architectural embellishment. Cockerell has illustrated this arrangement by a sketch, etched by himself on stone.

NIPHON. See *Japan.*

NISBET, Charles, D. D., first president of Dickinson college, Pennsylvania, was born in 1736, at Haddington, Scotland, and received his education in Edinburgh. For several years he officiated as minister of Montrose, and, in 1783, when the college in Carlisle was instituted, was invited to become its president. In 1785, he entered upon the duties of that station, and continued to fulfil them until his death, January 17, 1804, in the sixtieth year of his age. The learning of doctor Nisbet was very extensive. He was an admirable classical scholar, and particularly conversant with Greek. At one time he could repeat the whole of the Æneid and of Young's Night Thoughts; indeed, his power of quotation generally was inexhaustible. He was endowed with genuine wit, and was sometimes inclined to be sarcastic. His sermons were impressive and powerful. In disposition, he was sincere, benevolent, and humane.

NISI PRIUS. Trial at *nisi prius* is a name often given in England to trial by jury, in the superior courts. The term originated, in the English courts, in the following way: Questions of fact, in all causes commenced in the courts of Westminster hall, are, by course of the courts, appointed to be tried on a day fixed in some Easter or Michaelmas term, by a jury returned from the county wherein the cause of action arises; but with this proviso,—*Nisi prius justiciarii ad assisas capiendas venerint;* that is, unless before the day fixed, the judges of assize come into the county in question, which they always do in the vacation preceding each Easter and Michaelmas term, and there try the cause; and then, upon return of the verdict given by the jury to the court above, the judges there give judgment for the party for whom the verdict is found. The commission under which these judges of assize act is called a "commission of *nisi prius*," and, as the jury trials take place before them, while the judges in Westminster hall settle questions of law, these jury trials are called "trials at *nisi prius*."

NISMES. See *Nimes.*

NITRATE OF SILVER. See *Silver.*

NITRE; the common name of nitrate of potash. See *Potash.*

NITRIC ACID. See *Acid*, and *Nitrogen.*

NITROGEN; the name of an elastic fluid, discovered by doctor Rutherford, in 1772. It derives its name from its forming the basis of nitric acid. Lavoisier discovered, in 1775, that it is a constituent part of the atmosphere—a discovery which was also made, at about the same time, by Scheele. It is most easily procured by burning phosphorus in atmospheric air, which abstracts the oxygen; and the residual gas, after agitation with water, or solution of potash, is pure nitrogen. By exposing air to the liquor formed by boiling sulphur and lime with water, we obtain, in the course of a few days, very pure nitrogen; also, if a few pieces of flesh or muscular fibre be put into a retort, and nitric acid, diluted with four or five parts of water, be added, and a moderate heat applied, nitrogen gas will be disengaged, not, however, in a state of complete purity This gas has been known by various names, as corrupted air, mephitic air, phlogisticated air, and azote, the latter application having been derived from α *privative*, ζωη, life, in allusion to its unfitness for respiration—a character, however, common to many gases. Nitrogen gas is invisible, insipid, and inodorous. It is lighter than atmospheric air, its specific gravity being to that of the latter as ·9722 to 1. The weight of 100 cubic inches is 29·6527 grains. It is principally characterized by certain negative qualities, and by the nature of the compounds which it forms. It is uninflammable, and incapable of supporting combustion, a burning body immersed in it being immediately extinguished. It is equally incapable of supporting animal life by respiration; not, however, through any operation as a poison, but simply from the exclusion of oxygen. It is not perceptibly absorbed by water. Its peculiar characters, as a distinct substance, are better shown in its chemical combinations. It unites with oxygen in different proportions, and forms compounds possessed of very peculiar chemical properties. Compounds of it with chlorine and iodine may be obtained; and it is a chief ingredient in the products of the animal kingdom. It unites, too, with hydrogen, forming one of the alkalies—ammonia. What purposes are served by the nitrogen in the atmosphere, is not clearly understood. Its most obvious use is as a diluent to moderate the action of oxygen; but, as it is found to exist in large quantities in all animal substances, it is probably of more direct utility to some part of the animal system.

Nitrogen unites with oxygen in four proportions, forming as many direct compounds. These are, 1. protoxide of azote, or nitrous oxide; 2. deutoxide of azote, nitrous gas, or nitric oxide; 3. nitrous acid; 4. nitric acid.

Nitrous oxide, or *protoxide of azote*, was discovered by doctor Priestley, in 1772, but was first accurately investigated by Sir H. Davy, in 1799. The best mode of procuring it is to expose the salt called nitrate of ammonia to the flame of an Argand lamp in a glass retort. When the temperature reaches 400° Fahr., a whitish cloud will rise into the neck of the retort, accompanied by the copious evolution of gas, which must be collected over mercury for accurate researches, but, for common experiments, may be received over water. It has all the physical properties of common air. It has a sweet taste, a faint, agreeable odour, and is condensable by about its own volume of water. A taper plunged into it burns with great brilliancy, the flame being surrounded with a bluish halo. Sulphur and most other combustibles require a higher degree of heat for their combustion in it than in either oxygen or common air. Specific gravity, 1·5277. It is respirable, but not fitted to support life. Sir H. Davy first showed that, by breathing a few quarts of it, effects analogous to those occasioned by drinking fermented liquors were produced. Individuals who differ in temperament are, however, differently affected. Sir H. Davy describes the effect it had upon the following persons thus: "Mr James Thomson—involuntary laughter; thrilling in his toes and fingers; exquisite sensations of pleasure. A pain in the back and knees, occasioned by fatigue the day before, recurred a few minutes afterwards. A similar observation, we think, we have made on others; and we impute it to the undoubted power of the gas to increase the sensibility, or nervous power, beyond any other agent, and probably in a peculiar manner. Mr Robert Southey could not distinguish between the first effects and an apprehension of which he was unable to divest himself. His first definite sensations were a fullness and dizziness in the head, such as to induce the fear of falling. This was succeeded by a laugh which was involuntary, but highly pleasurable, accompanied by a peculiar thrilling in the extremities—a sensation perfectly new and delightful. For many hours after this experiment, he imagined that his taste and smell were more acute, and is certain that he felt unusually strong and cheerful. In a second experiment, he felt pleasure still superior, and has since poetically remarked that he supposes the atmosphere of the highest of all possible heavens to be composed of this gas. In persons of great susceptibility, the inspiration of this gas has been known to produce unpleasant and even alarming symptoms: by such it cannot be inhaled with impunity. Before concluding our account of it, we must explain the theory of its production from the nitrate of ammonia. The sole products of the operation above described are water and the nitrous oxide gas. Nitrate of ammonia is composed of

Nitric acid, ...	54,	one proportion;
Ammonia, ...	17,	one proportion;
	71	

Nitric acid consists of

Nitrogen, ...	14,	one proportion;
Oxygen, ...	40,	five proportions;
	54	

and ammonia of

Nitrogen, ...	14,	one proportion;
Hydrogen, ...	3,	three proportions.
	17	

By the action of heat, these elements arrange themselves in a new order. The hydrogen takes so much oxygen as is sufficient for forming water, and the residual oxygen converts the nitrogen both of the nitric acid and of the ammonia into the protoxide of nitrogen. The decomposition of 71 grains of the salt will therefore yield

Water,	27, or 3 proportions	Oxygen,	24, or 3 proportions.
		Hydrogen,	3, or 3 proportions.
Nitrous oxide,	44, or 2 proportions	Oxygen,	16, or 2 proportions.
		Nitrogen,	28, or 2 proportions.
	71		

The *nitric oxide*, nitrous gas, or deutoxide of nitrogen, was discovered by doctor Hales, but its properties were first investigated by doctor Priestley. It is obtained by the action of diluted nitric acid on metals, the metal abstracting a portion of the oxygen from the acid, and converting it into nitric oxide, which assumes the elastic form. It is not always evolved pure, nitrous acid and nitrogen gas being often formed at the same time. Its purity is enhanced when the metal copper or quicksilver is used. It is a colourless gas. When mingled with common air, or any gaseous mixture that contains oxygen in an uncombined state, dense, suffocating, acid fumes, of a red or orange colour, are produced, called *nitrous acid vapours*, which are copiously absorbed by water, and communicate acidity to it. Nitric oxide is thus distinguishable from every other substance, and, for the same reason, affords a convenient test for detecting the presence of free oxygen, wherever it exists in gaseous mixtures. It does not redden the vegetable blues; is sparingly soluble in water. Burning sulphur and a lighted candle are instantly extinguished by it; but charcoal and phosphorus, if in the state of vivid combustion at the moment of being immersed in it, burn with increased brilliancy. It is quite irrespirable, exciting a strong spasm of the glottis, as soon as an attempt is made to inhale it. It is partially decomposed by being passed through red hot tubes. Two volumes of the nitric oxide yielded Sir H. Davy one volume of nitrogen, and about one of carbonic acid, in his decomposition of it by means of burning charcoal, whence it is inferred to consist of equal measures of oxygen and nitrogen gases united, without any condensation.

Nitrous acid is obtained by exposing nitrate of lead to heat in a glass retort. Pure nitrous acid comes over in the form of an orange-coloured liquid. It is so volatile as to boil at the temperature of 82°. Its specific gravity is 1·450. When mixed with water, it is decomposed, and nitrous gas is disengaged, occasioning effervescence. It is composed of one volume of oxygen, united with two of nitrous gas. The various-coloured nitric acids found in commerce are not nitrous acids, but nitric acid, impregnated with nitrous gas.

Nitric acid was first obtained by distilling a mixture of nitre and clay, during the thirteenth century, by Raymond Lully, a chemist of the island of Majorca.

Basil Valentine, in the fifteenth century, describes the process more minutely, and calls the acid *water of nitre.* Subsequently it was called *spirits of nitre,* and *aqua fortis.* Nitric acid is prepared as follows: Three parts of pure nitrate of potash, coarsely powdered, are to be put into a glass retort, with two of strong sulphuric acid. To the retort is united a tubulated receiver, and heat is applied to the retort by a sand bath. The first product that passes into the receiver is generally red and fuming, but these appearances soon subside, and the acid comes over pale, and even colourless. After this it again becomes more red and fuming, till the end of the operation. The acid obtained, provided the process be carefully conducted, will have a specific gravity of 1·5; and acid of this density may be obtained, amounting to two-thirds of the weight of the nitre employed. The receiver requires to be refrigerated by cold water or ice. When a strong nitric acid is not the object, but it is intended simply to manufacture the common dilute acid, called, in commerce, *aqua fortis,* less sulphuric acid, in proportion to the nitre, will suffice: 100 parts of good nitre, sixty of strong sulphuric acid, and twenty of water, form economical proportions. Nitric acid, having a specific gravity 1·5, contains nearly eighty-six per cent. of acid, and fourteen of water. It has been formed by electrizing, for a great length of time, a mixture of oxygen and nitrogen gases, in the proportion by measure, of five parts of oxygen to three of common air, or seven of oxygen to three of nitrogen, or common air by itself. A little water is contained in the tube, holding potash in solution which, after the experiment, becomes converted into nitrate of potash, This experiment was first performed in 1785, by Mr Cavendish, who inferred from it that nitric acid is composed of oxygen and nitrogen. Nitric acid, as obtained in the laboratories of the arts, frequently contains portions of sulphuric acid and of muriatic acid. The former is derived from the acid which is used in the process, and the latter from sea-salt, which is frequently mixed with nitre. These impurities may be detected by adding a few drops of a solution of muriate of barytes, and nitric of silver, to separate portions of nitric acid, diluted with three or four parts of distilled water. If the muriate of barytes cause a cloudiness or precipitate, sulphuric acid must be present; if a similar effect be produced by nitrate of silver, the presence of muriatic acid may be inferred. Nitric acid is purified from sulphuric acid by redistilling it from a small quantity of the nitrate of potash, with the alkali of which the sulphuric acid unites and remains in the retort. To separate the muriatic acid, it is necessary to drop a solution of nitrate of silver into the nitric acid as long as a precipitate is formed, and draw off the pure acid by distillation. Nitric acid possesses acid properties in an eminent degree. It unites with and neutralizes alkaline substances, forming with them salts, which are called *nitrates.* When of a specific gravity of 1·5, it emits dense, white, suffocating fumes, if exposed to the air, from which it attracts moisture, and experiences a diminution in its density and strength. A rise of temperature is occasioned by mingling it with water in a certain proportion. From its strong affinity for water, it occasions snow to liquefy with great rapidity. It boils at 248° Fahr., and may be distilled without suffering material change. It may be frozen at about 50° below zero: when diluted with half its weight of water, it becomes solid at 1½° F. Nitric acid acts powerfully on substances which are disposed to unite with oxygen; and hence it is much employed by chemists for bringing bodies to the maximum of oxidation. Nearly all the metals are oxidized by it, and some of them, such as tin, copper, and mercury, are attacked with great violence. If flung on burning charcoal, it increases the brilliancy of its combustion in a high degree. Sulphur and phosphorus are converted into acids by its action. All vegetables are decomposed by it. In general, the oxygen of the nitric acid enters into direct combination with the hydrogen and carbon of those compounds, forming water with the first, and carbonic acid with the second. This happens remarkably in those compounds in which hydrogen and carbon are predominant, as in alcohol and the oils. It effects the decomposition of animal matters also. The cuticle and nails receive a permanent yellow stain when touched with it; and, if applied to the skin in sufficient quantity, it acts as a powerful cautery, destroying the organization of the part entirely. When oxidation is effected through the medium of nitric acid, the acid itself is commonly converted into the deutoxide of nitrogen, which is sometimes evolved in a state of purity, but more commonly mingled with nitrous oxide and nitrous acid gases. The direct solar light deoxidizes nitric acid, resolving a portion of it into oxygen and nitrous acid. When the vapour of nitric acid is transmitted through red-hot tubes, it suffers complete decomposition, and a mixture of nitrogen and oxygen gases is the product. Nitric acid is of considerable use in the arts. It is employed for etching on copper; as a solvent of tin, to form with that metal a mordant for some of the finest dyes; in metallurgy and assaying, in various chemical processes, on account of the facility with which it parts with its oxygen and dissolves metal; in medicine as a tonic, as also in the form of vapour to destroy contagion. For the purposes of the arts, it is commonly used in a diluted state, and contaminated with the sulphuric and muriatic acids by the name of aqua fortis, two kinds of which are found in the shops, —one called double aqua fortis, which is about half the strength of nitric acid; the other simply aqua fortis, which is half the strength of the double. A compound made by mixing two parts of the nitric acid with one of muriatic, known formerly by the name of *aqua regia,* and now by that of *nitro-muriatic acid,* has the property of dissolving gold and platina. On mixing the two acids, heat is given out, an effervescence takes place, and the mixture acquires an orange colour. Nitrogen combines with chlorine and iodine to form two very remarkable compounds. The first of these, the *chloride of nitrogen,* is formed by the action of chlorine on some salt of ammonia. Its formation is owing to the decomposition of ammonia (a compound of nitrogen and hydrogen) by chlorine: the hydrogen of the ammonia unites with chlorine and forms muriatic acid, while the nitrogen of the ammonia, being presented in its nascent state to chlorine dissolved in the solution, enters into combination with it. The chloride of nitrogen is formed gradually, when a glass receiver, filled with chlorine gas, is inverted over a bowl containing a solution of muriate of ammonia, and falls in little globules through the fluid to the bottom of the dish, whence it is withdrawn with the utmost care by means of a glass syringe. On being injected into a metallic mortar, or leaden dish containing a little volatile oil, or phosphorus in small pieces, it detonates with extreme violence. Its specific gravity is 1.653: it is not congealed by the intense cold produced by a mixture of snow and salt; may be distilled at 160° Fahr., but explodes at a temperature between 200° and 212°. It consists of chlorine 144, or four proportions; nitrogen, 14, or one proportion.

Iodide of nitrogen. From the weak affinity that exists between iodine and nitrogen, these substances cannot be made to unite directly; but, when iodine is put into a solution of ammonia, the alkali is decomposed; its elements unite with different portions of iodine, and thus cause the formation of hydriodic acid and iodide of nitrogen. The latter subsists in the form of a dark powder, which is characterized, like chloride of nitrogen, by its explosive property. It detonates violently as soon as it is dried, and slight pressure while it is moist produces a similar effect. Heat and light are emitted during the explosion, and iodine and nitrogen are set free. It consists of one proportional of nitrogen to three of iodine. With regard to the nature of nitrogen there has been, and still exists, considerable diversity of opinion. Berzelius has inferred, from speculations connected with the doctrine of definite proportions, that it is a compound of oxygen with an unknown base, to which he has given the name of *nitricum*, and has fixed the proportions at 44·32 of base, and 55·68 of oxygen; others, on the contrary, have affirmed, as a consequence of this doctrine, that nitrogen can contain no oxygen—a proof of the little value to be attached to such speculations. The strongest arguments for the compound nature of nitrogen are derived from its slight tendency to combination, and from its being found abundantly in the organs of animals which feed on substances that do not contain it. Its uses in the economy of the globe are little understood. This is likewise favourable to the idea that its real chemical nature is as yet unknown, and leads to the hope of its being decomposable. It would appear that the nitrogen of the atmosphere and oxygen combine in other proportions, than those in which they exist in the air, under certain circumstances. Thus we find that mild calcarious or alkaline matter favours the formation of nitric acid in certain regions of the earth; and that they are essential to its production in our artificial arrangements for forming nitre from decomposing animal and vegetable substances.

NITROUS OXIDE. See *Nitrogen.*

NIVOSE. See *Calendar.*

NIZAM DJEDID. See *Ottoman Empire.*

NIZZA. See *Nice.*

NOAH; the patriarch of whom we are told, in the book of Genesis, that God chose him, for his piety, to be the father of the new race of men which peopled the earth after the deluge. Having been admonished by God of the coming flood, he built a vessel by the direction of Jehovah, into which he entered with his family, and all kinds of animals. (See *Deluge.*) After the waters had subsided from the earth, the vessel which contained the progenitors of all living creatures, rested on mount Ararat, in Armenia, where Noah offered a thank-offering to God, and was assured that the earth should never again be destroyed by a flood. As a sign of this covenant with Noah, God set the rainbow in the clouds. Permission was now granted to the human race to eat flesh, provided they did not eat it raw with the blood; and murder was declared punishable by death. Noah then began to cultivate the earth, and planted a vineyard, and, having made wine, became intoxicated. While under the influence of the wine, his son Ham ridiculed the exposure of his father, while his other sons, Shem and Japheth, reverently covered him with a garment. When the patriarch awoke, and was aware of what had taken place, he gave his blessings to the filial piety of the latter, and pronounced a curse of servitude upon the posterity of the former. Noah died at the age of 950 years, 350 years after the flood.

NOAILLES; one of the oldest noble families in France. Among the members of this family, which has ever been invested with the first offices in the kingdom, are,

1. *Antoine de Noailles*, celebrated on account of his embassies under Henry II. The abbé Vertot has published an account of them. His brother, the bishop of Aix, was also employed on several important and difficult diplomatic missions to England, Italy, and even Constantinople.

2. *Anne Jules*, duke of Noailles, born 1650, inherited from his father the first company of the *gardes-du-corps*, and, in the war of 1689—97, commanded a *corps-d'-armée* in Catalonia; in 1693 was made marshal, and, in 1694, gained the battle of the Ter against the Spaniards. He died in 1708.

3. *Louis Antoine de Noailles*; brother of the preceding, archbishop of Paris and cardinal. On account of the aid which he afforded to Quesnel, he was persecuted by the Jesuits, and especially by Le Tellier, the confessor of Louis XIV. They prevailed on the pope to issue the bull *Unigenitus* (q. v.), which was resisted by Noailles, as archbishop of Paris, till he was finally compelled to yield, in his 78th year. He died soon afterwards, in 1729.

4. *Adrian Maurice*, duke of Noailles, son of the above-mentioned Anne Jules, served with distinction in Spain, in the Spanish war of succession, was created grandee of Spain, of the first class, and, in 1698, married Françoise d'Aubigné, a niece of madame de Maintenon. During the minority of Louis XV., he was president of the council of finance, and member of the council of regency, which he left, however, in 1721, rather than concede the presidency to cardinal Dubois. He was exiled by the influence of this intriguing priest, after whose death he was recalled, in 1723, when he was reinstated in his former offices. In 1734, he served under Berwick in the campaign on the Rhine, and at the siege of Philipsburg, and, after the death of Berwick, received the marshal's staff. In the following year he commanded the French army in Italy. When the Austrian war of succession broke out, after the death of the emperor, Charles VI., Noailles received a command on the Rhine. In 1743, by the unseasonable impetuosity of his nephew, the count of Grammont, he lost the battle of Dettingen, and, by this means, the fruits of the wise measures by which he had brought the British army to the verge of ruin. His age no longer permitting him to fight at the head of armies, he entered the ministry. With splendid talents, he united all the faults of the courtiers of the times. His friendship for marshal Saxe induced him, although an elder marshal, to serve him as first aid in the battle of Fontenoy. His two sons were, in 1775, made marshals of France. After his death, the abbé Millot published *Mémoires politiques et militaires pour servir à l'Histoire de Louis XIV., et de Louis XV., composés sur les Pièces originales recueillies par Adrien Maurice Duc de Noailles*, &c., which contains interesting information, not only respecting the history of the wars of Louis XIV. and XV., but also respecting the history of Spain under Charles II. and Philip V.

In later times, the following members of this family have rendered themselves distinguished.

Louis, viscount of Noailles, a general, and member of the first national convention, in 1789. Chosen by the nobility a deputy to the states-general, he proposed to his chamber, June 13, to form a union with the third estate. Montmorency, Rochefoucauld, Lafayette, &c., voted in the affirmative, and, after long debates, forty members of the chamber of nobles united with the national assembly, June 25. August 4, Noailles was the first who exhorted the clergy and nobility in the assembly to renounce their privileges, as injurious to the common weal. After the dissolution of the constituent assembly he went into the army, and, in 1792, commanded the chain of outposts at Valenciennes. His birth subjected him to suspicion: he demanded his dismissal, and lived in retirement in the country. Under the consular government, he returned to the service, and gained distinction in St Domingo, as general of brigade, under

Leclerc and Rochambeau. After the evacuation of the island, he embarked on board a vessel of war for Cuba, but was killed in a battle with the British, who took the vessel.

His son *Alexis*, count of Noailles, born at Paris, June 1, 1783, minister of state of Louis XVIII., was obliged to leave France in 1811, because he had incurred the suspicions of the imperial government, and for a time lived in Switzerland. The princes of the house of Bourbon sent him on important missions to the German courts, to Russia and to Sweden, after which he repaired to the residence of Louis at Hartwell, in England. In 1813, he served, as aid of the crown-prince of Sweden, in Germany. After the battle of Leipsic, he left the Swedish service, accompanied the allied army to France, and fought at Brienne and La Fere Champenoise, after which he joined the count of Artois at Vesoul, became his aid, and was afterwards the plenipotentiary of Louis XVIII. at the congress of Vienna. He returned with the king from Ghent to Paris, was chosen deputy of the chamber of 1815, and, in October of the same year, was appointed by Louis minister of state, but without any particular department. In 1828, count Alexis of Noailles was a member of the chamber of deputies, and, at the suggestion of the minister Portalis, was appointed by the king member of the commission to examine whether the schools of the clergy (the Jesuits, &c.) accorded with the fundamental principles of the French constitution.

Ant. Claude Dominique Juste, count of Noailles, cousin of the former, second son of the prince de Poix, born at Paris, August 25, 1777, was one of the first chamberlains of Napoleon, and remained in this post till 1814. After the restoration, he was the ambassador of Louis XVIII. at Petersburg, till superseded, in 1820, by the count de Ferronays.

NOBILITY. The history and political importance of a hereditary nobility—that is, a rank of society which claims the first civil honours and privileges above the rest of the citizens, by no other right but that of birth—is one of the most momentous and most contested points in the discussions on civil society, which has not yet been sufficiently explained by historical facts, notwithstanding the countless number of essays that have been published on this subject. Moreover, the variety of its forms, and relations to other classes of society, is so great, and even the origin of its existence so different, that we cannot safely pronounce a general judgment in its favour or against it. We cannot say, on the one hand, that such a difference of hereditary rank is indispensable to every nation, or, at least, to every monarchy; and, on the other hand, that it never has proved useful, and consequently ought to be abolished. We may, in the history of almost every nation, discern a period in which the great interests of mankind, knowledge and virtue, a love of moral beauty, and the charms of nature and art, have been cultivated and preserved by a select class of society; and, on the contrary, we may also distinguish another period, when these very treasures, which constitute the worth of a state, have been trampled upon by the same class. Thus the history of monarchies, both ancient and modern, shows plainly that the greatest obstacles in the way of peace, good order, and justice, have originated with the nobility, impatient of the restraint which the good of society requires, although very willing to flatter superior power, if they are allowed to participate in it. Revolutions have, till late years at least, almost always originated with a discontented nobility; and, for one prince whom popular insurrections have deprived of his throne and life, hundreds of others may be mentioned who have lost both by the conspiracies and factions of the nobility. The possession of extensive estates, with authority over numerous vassals and dependents, gives to the nobles a power which throws great difficulties in the way of monarchs who desire to protect the lower classes against injustice, and to preserve in them feelings of manliness and self-respect—difficulties against which the noblest monarchs and the ablest statesmen have often striven in vain. The result of such a strife frequently is, that the monarchical becomes, in fact, an aristocratical government; and from this there is but a small step to the introduction of a sovereign senate, composed of the privileged families. But such a government is truly most contradictory to reason; for it neither recognises the equality of all the citizens, nor the necessity of removing the contest for pre-eminence caused by the passions of men; and history teaches us that it is the most oppressive and most unjust of all governments. The usurpations of the patricians in Rome and Venice have been almost equalled, in modern times, by those of the nobility of Poland and Sweden. Montesquieu's celebrated remark, "*Point de monarque, point de noblesse: point de noblesse, point de monarque,*" is true only in a qualified sense. Lord Bacon, a far greater thinker, on the contrary, sets forth, in four positions, every thing that can be said against the nobility: "*Raro ex virtute nobilitas; rarius ex nobilitate virtus; nobiles majorum deprecatione ad veniam sæpius utuntur, quam suffragatione ad honores. Tanta solet esse industria novorum hominum, ut nobiles præ illis tanquam statuæ videantur; nobiles in stadio respectant nimis sæpe, quod mali cursoris est.*"—*De Augmentis Scientiar.* (lib. vii). The opinions of Franklin, Kant, Boileau, and Voltaire, on this subject, are generally known. Kant describes hereditary nobility as a rank which precedes merit, and is generally not even followed by merit. Reason bids us value in man none but moral excellence. Justice requires that the state should hold out equal privileges to all the citizens, without discrimination; protect their rights by equal laws, and prevent the few from subjecting the many. But this does not prove the inconsistency of a hereditary nobility with the best constitution which the circumstances of a particular state will allow, because time may have interwoven many valuable interests with it, and made them dependent upon it. It is plain that, in a state where the ideas of justice and citizenship are clearly understood, and well rooted, a privileged order is only desirable under very peculiar circumstances, for this simple reason, that all hereditary dignities, privileges, &c., are *irrational.* Human folly, however, may render it necessary to admit a hereditary monarchy, for the purpose of preventing by this evil (for every hereditary government is an evil) still greater ones. A new nation will never admit this privileged rank. The modern nobility had its origin in ages when power was the only law, and the usurpations of the stronger were confirmed by prescription. Thus it has become so much interwoven with all the interests of the several states, that its abolition would be a very difficult task. Norway, however, effected this object, in 1821, against the will of the king, whom the constitution, however, compelled to sign the decree, which had passed three times in the assembly of the states.

Considering this subject in a historical point of view, a hereditary nobility is found in the infancy of almost every nation, ancient and modern. It existed before the period of authentic history. Its origin is to be attributed to various causes; for the most part to military despotism; in some cases, to the honours paid to superior ability, or to the guardians of the mysteries of religion. The priestly nobility of the remotest antiquity has everywhere yielded to the superiority of military chieftains. The caste of the Bramins in India has surrendered its power to the caste of the Ketri, though the rulers on the islands of the Indian archipelago are even now obliged to pay the greatest respect to the descendants of the elder nobility, over whom they exercise unlimited power.—See Crawfurd's *History of the Indian archipelago* (London, 1820, iii. 33). Among the ancient German tribes, which gave its present form to modern Europe, only obscure traces of hereditary nobility are found, which, in later periods, was generally established throughout that continent. Many of them seem, however, to have recognised one ruling family, as the Saxons, Danes, and Normans the family of Odin; the Visigoths that of Balth; the Ostrogoths that of Amal; the Bavarians that of Agilolfing. These families seem to have stood in the same relation to their nations as the Incas to the Peruvians; for their founders (the *Asen*) so much excelled the mass of the people, and conferred such great benefits upon them, that a divine origin was attributed to them, and their descendants were, on this account, honoured during many ages. Besides these, no other hereditary nobility existed among the Franks, Saxons, Normans, Danes, Swedes, and most of the other nations of the North. The *Athelings* of the Saxons are exclusively members of the reigning house, and the same name frequently denotes only the successors to the throne. The *Antrustiones* and *Leudes* (*Liti*) of the Franks; the *Degenes* (*Thaini, Thani, Thegnas*, &c.) of the Saxons; the *Hirdmans* and *Dingmans* of the Danes and Normans, are not noblemen, in the modern sense of the word, but merely the successors of the prince's companions, described by Tacitus, and have gradually usurped a hereditary rank by the later addition of feudal property. The dignities of the counts of the Franks, the aldermen and great *thanes* of Britain, as also of the *jarls* (in England *Eorlas*) of Denmark, were accessible to every one distinguished by merit, and favoured by fortune. In France and Germany, the first hereditary nobility begins with the downfall of the Carlovingian dynasty; in England, with the conquest of the Normans, in the tenth and eleventh centuries; and was afterwards spread over all Europe; for, since that time, dignities, as well as lands, have become hereditary. Under various forms and combinations, the nobles of the first rank (as princes, counts, and lords), together with the warriors (consisting of *knights* bound to do service in war and at the court), which latter were not always considered as perfectly free, were distinguished from the peasants and common citizens, who were bound to perform the common laborious services. These latter, however, are not to be considered altogether in the light of bondmen. The further progress of these civil distinctions, and their relations to the people, took a very different course in the different countries of Europe. In England, Scotland, Spain, and to some extent in Italy, the higher nobility, attached to the titles of lords and barons, descended only to the eldest son. The younger sons, even in case of preferment in civil life (their rank in England is established by law), belong essentially to the mass of the people. They engage in various kinds of business; they not only devote themselves to the clerical profession, and to military service, but become lawyers, merchants, proprietors of manufactures, &c. In England, hereditary nobility, including various classes of titles, e. g. those of dukes, marquises, earls, viscounts, and barons, (see *England*) is rather more personal. There are also feudal tenures merely titular, to which certain privileges and honours are attached, the free exercise of which is allowed to every proprietor; but the proprietor does not belong to the nobility, unless he is raised to this distinction by a special patent. In Spain and Italy, on the other hand, the same rank (that of the *titulados*, princes, dukes, marquises, and counts) depends, in a greater measure, upon property; for these titles, though sometimes conferred by the monarchs, are mostly connected with estates, and often attached to very small fiefs. Hence the multitude of counts in Upper Italy, the *conti di terra ferma* of Venice in former times. The distinguished Spanish families collect, in this manner, a great number of such titles, which constitute an object of their pride. They are called *gorras* (caps), and sometimes amount to four or five hundred. In France, this rank is common to all the members of the noble family. The rights of the peerage, and the feudal estates, however, descended, even before the revolution, only to the eldest son; and the younger sons were obliged to seek their fortune either in the army or the church. Every meaner employment, even mercantile business, was followed by the loss of nobility. The nobility of England has never risen to sovereignty, except that some provinces which formerly were domains of princes of the royal family (as Lancaster, Cornwall), and some viscounties (Durham, Chester, the isle of Ely, and especially the isle of Man, belonging to the duke of Athol), enjoyed, as *counties palatine*, so called, subordinate rights of government. The sovereignty connected with the ancient fiefs of the French princes—as the dukedoms of Normandy, Bretagne, Guienne, Burgundy; the counties of Toulouse, Champagne, Flanders; and the territories of Dauphiné, Provence, Franche-Comté, Venaissin, &c.—took its rise at a very early period, and had already become complete, when Hugh Capet ascended the throne. But France was fortunate enough to unite, by degrees, all these extensive fiefs with the crown, so that only a few small sovereignties (as the princedoms of Bouillon, Dombes, Orange, Avignon, and Venaissin, &c. &c.) have maintained themselves as such to more recent periods. In the age of Louis IX., appeals from the courts of the barons to the supreme courts of the king and parliaments were introduced, and were followed by a gradual extension of the king's authority over the territories of the barons; and finally, under the reign of Louis XIII., the power of the grandees was completely destroyed by Richelieu. The course which the nobility took in Germany was different. Here the ancient dukes of Saxony, Bavaria, Franconia, Suabia, Lotharingia, and, next to them, the margraves in the east and north of the German empire, obtained, at the same time as in France, the rights of sovereignty; and the title of *count* became partly hereditary, partly an appendage to the ecclesiastical establishments. The emperors succeeded in annihilating these ancient principalities, but profited little by it, for new sovereignties soon took the places of the ancient dukedoms, inferior in size and power, but equal to them in the extent of their rights and privileges. The greater number of the courts assumed the rights of sovereignty, and a vast number of ruling families thus sprang up in Germany, and formed a ruling order of nobility, in which not only the rank, but also the property, was hereditary, and became the common inheritance of the whole family. One principle in this system is peculiar to the German states, which was never established in any other country of Europe, namely, that the mother must be of equal rank with the father, in order to place her children in the full possession of their father's rights. Many even princely families, as Baden, Anhalt, &c., have transgressed this principle; but others adhered to it with great strictness. The same principle has been extended to the lower class of the German nobility.

In their case, however, it affects only the enjoyment of certain privileges common to the whole body of nobility—privileges by which the German nobility is more strictly distinguished from the middle classes of freemen than that of any other country. In the rest of Europe, not even the highest class of nobility recognises this principle. In France, the royal alone affords no example of a marriage contracted with persons of a lower rank, though the law would not have interfered. The legitimated branches of the royal family, the offspring of mistresses, the princes of Vendome, Verneuil, Vermandois, Maine, Toulouse, Penthievre, &c., which are now extinct, Louis XIV. did not hesitate, in his will, to recognise as capable of succession to the French throne, in spite of their descent, not merely from parents of unequal rank, but even from an illegitimate connexion; and the same right could never have been contested in regard to children of a legitimate connexion between parents of unequal rank. In the noble families of France, the rank of the mother was likewise of no consequence; the whole importance of the family rested on the lineage of the father. The same is the case in England, where intermarriages between the families of respectable citizens (merchants, bankers, brewers, advocates, &c.) and the highest nobility are not uncommon. Thus the wife of the celebrated Whitbread, speaker in parliament, and citizen and brewer of London, was a sister of earl Grey. The first wife of king James II. was the daughter of chancellor Hyde, who afterwards became earl of Clarendon; and her daughters, Mary and Anne, succeeded to the throne of England. Similar examples may be found in other countries. In Germany alone, the interests of the kindred of princes, as well as the exclusive claims of the nobility to the chapters and prebends of the ecclesiastical orders, have produced those rigid principles above-mentioned. Germany is likewise the only country which affords an example of a select nobility composed of reigning families and princes, who, besides the right of sovereignty over their own territories, had a part in the government of the empire, by their seat and vote in the diet, or, at least, a share in the collective vote of the prelates, or of the four bodies of counts. For some rights of sovereignty belonged also to the knights of the empire, who did not belong to the select nobility. The limits of this select nobility were extremely uncertain and contested, though very important to be settled, on account of the restrictions on the marriage of its members. The rank of the select nobility was partly personal, partly hereditary. The former was attached to ecclesiastical princes, bishops, and abbots, many of whom were, at the same time, actual sovereigns; but many possessed only the dignity of princes of the empire, without the rights of sovereignty. In most of these ecclesiastical principalities, the German nobility had excluded untitled men of learning and talent, against the will of the pope, and his express order, promulgated in the treaty of Westphalia (article v., section 17). The highest degree of hereditary nobility was peculiar to the families of the princes and counts of the empire, and confined to Germany. It is true many French, Italian, Spanish, and English families had the title of princes, dukes, and marquises (English dukes and marquises are also called *princes* in official documents), but the German princes considered few of them as their equals. To this class belong, in France, those six foreign families which enjoyed at the French courts the rights of *princes étrangers*, on account of their relationship with sovereign houses, or on account of their descent from former sovereigns of Brétagne and Aquitania. These families in France were those of Lotharingia, Savoy, Grimaldi (princes of Monaco), Rohan, Latour d'Auvergne (dukes and princes of Bouillon). Some Polish families belong also to this class, as the Radzivills, Czartoriskis, &c. In Sweden and Denmark, a select nobility of this kind has never existed. Though many German families of this rank have lost their sovereignty, yet the act of the German confederation has conceded to them the highest rank of nobility, equal to that of the sovereign houses. There was still a strict distinction in Germany between the ancient princes, who had risen to this dignity before 1580, and those of a more recent date. The more, however, the power of the German principalities increased, the more the importance of the nobility decreased. On this account, a society was formed in 1815, called the *chain of nobility*, for the purpose of restoring and promoting the interests of the nobles; but it met with little success. The British nobility, composing the house of lords, consists of five ranks: duke, marquis, earl, viscount, baron. The nobility in France is designated by the title *peres de France;* for both the ancient and modern titles of nobility, as *prince, duc, marquis, comte, vicomte, baron,* occur also without *peerage.* The lower nobility (*gentry* in Britain), considered as a separate rank, is of later origin. In Britain, every one belongs to it who does not engage in any mean employment, and, for this reason, is entitled to the appellation *esquire*, and a coat of arms. In Spain, any one may call himself *hidalgo* whose ancestors have not been engaged in mean employments; and in France this dignity was connected with many even insignificant offices, and, of course, very easily obtained. Great importance was, however, attached to ancient nobility, that is, nobility which could not be traced to its origin. Nobility of 400 years' duration was requisite for a presentation at court. The *Storthing* of Norway, as was mentioned above, abolished nobility in 1821. The Russian nobility, though its origin is not directly derived from the German tribes, has appropriated to itself all its degrees and titles. (See *Russia*). In Livonia and Esthonia, the ancient nobility, founded on conquest, is, as yet, in existence. The dominion of the Russian nobility over their peasants gives a political importance to this rank, though destitute of the rights of sovereignty.

Nobility was very early conferred by patent. As soon as the nobles had assumed the character of a distinct rank in the state, the monarchs also availed themselves of their right of conferring degrees of nobility, and insisted upon the principle that, in a monarchy, no privilege could be more ancient, or could have any other origin, than the prerogative of the monarch himself. Philip III., therefore, first began (1270) to grant charters of nobility in France, and Germany soon followed his example. The degrees of the lower nobility in Germany were, 1. The title *Von;* 2. *Edler von;* 3. *Ritter;* 4. *Bannerherr;* 5. *Freyherr;* 6. *Count.* Their privileges were originally of little importance; but, in several countries, they were enlarged to a considerable extent by law, as well as by custom and practice. They enjoyed immunity from taxes, and an exclusive right to the highest public offices, especially in the army. The most important of these privileges have, in modern times, either been limited or entirely abolished, because they were inconsistent with justice, and an obstacle to the prosperity of the state. The French revolution first deprived the nobles of that country of their oppressive privileges and exclusive rights, as that of jurisdiction, &c. (decree of August 4, 1789); and, after the overthrow of the feudal system by a number of laws, the decree of June 19, 1790, abolished hereditary rank entirely. The senate under Napoleon (August 14, 1806), and the decree of March 1, 1808, gave rise to a new hereditary nobility, with the titles of princes, dukes, counts, barons, and chevaliers, which descended, however, only to the eldest son. After the restoration of the Bourbons, the ancient nobility reclaimed their former rights and privileges.[*] Thus nobility has again been generally introduced into all the states of Europe except Norway, where the *Storthing* has abolished it by the three successive decrees of 1815, 1818, and 1821. The king, indeed, was unable to prevent it; but, on the principle of conforming the social system of his country to the civil organization of the neighbouring states, he proposed the establishment of a new hereditary nobility, which should be conferred by the king on persons who had benefited their country, and which should descend to the eldest son. But the *Storthing* rejected the proposal, because it was against the twenty-fifth article of the constitution of 1814, which declares that no hereditary privileges, personal or real, can be conferred on any native of Norway.

NOBLE; an ancient money of account, containing six shillings and eightpence.

NODE; the point where the orbit of a planet intersects the ecliptic.

NOLA; a town near Naples, in Lavora, said to have been built by the Etrurians before Rome, thirteen miles east of Naples; lon. 14° 20′ E.; lat. 40° 53′ N.; population, 8850; bishop's see. It was once a Roman colony, rich and flourishing, and is yet a handsome town. The silk spun in the neighbourhood is much esteemed. Bells are said to have been first made here, and here Augustus died. Near it Hannibal was twice defeated by Marcellus.

NOLLEKINS, Joseph, an English sculptor, born in London in 1737, was the son of a painter, was placed early under Scheemakers, and, in 1759 and 1760, gained premiums from the society of arts. He subsequently repaired to Rome, where he had the honour of receiving a gold medal from the Roman academy of painting and sculpture. He remained nine years at Rome, during which time he executed the busts of many Englishmen of distinction, and returned in 1770. Nollekins was chiefly distinguished by his careful and accurate imitation of nature, and by the absence of any peculiarity of manner. His Venus with the Sandal is esteemed his principal ideal production; but his professional reputation rests principally upon his busts. He died, April 23, 1823.—See Smith's *Nollekins and his Times* (2 vols., 8vo, 1828).

NOLLE PROSEQUI is a stoppage of proceedings by a plaintiff, and is an acknowledgment that he has no cause of action.

NOLLET, John Antoine; a distinguished cultivator of natural philosophy and natural history, born at Pimbré, near Noyon, 1700, of poor parents. He received his first instruction at Clermont and Beauvais, and then went to Paris, where he became intimate with Réaumur, Dufay, Duhamel, and Jussieu. In 1738, count Maurepas first established a professorship of experimental physics for Nollet, who was also made member of several scientific societies. To extend his acquaintance with science, he went to England and Italy. In 1744, he was appointed to instruct the dauphin in experimental physics at Versailles. He employed himself particularly in experiments on electricity. Nollet died at Paris, 1770. His works are principally in the Memoirs of the Academy of Sciences at Paris. His treatise on the Hearing of Fish is particularly esteemed. He also wrote *Leçons de Physique expérimentale* (Amsterdam, 1754, 4 vols., 12mo), and *L'Art des Expériences* (Amsterdam, 1770, 3 vols., 12mo).

NOMADS (from the *Greek*); tribes without fixed habitations, generally engaged in the tending and raising of cattle, and changing their abode as inclination prompts. But landed property and agriculture are the chief supports of a permanent civilization, so that the nomads are far behind agriculturists in this respect. Nomadic tribes are seldom found to quit their wandering life, until they are compelled to do so by being surrounded by tribes in settled habitations, or unless they can make themselves masters of the settlements of a civilized nation. But this change commonly takes place by degrees. Some of the greatest revolutions in history have been effected by these wandering tribes. North Africa, the interior of North and South America, and the northern and middle parts of Asia, are still occupied by nomads. Different tribes, however, possess different degrees of civilization. Some are little better than bands of robbers.

NOMENCLATOR was, with the Romans, a servant, who, at great festivals, informed the guests of the name and ingredients of the dishes—not a bad fashion. There were more important nomenclators, whose business it was to attend candidates for public offices, and suggest to them the names of the persons whom they met, that they might be able to address them familiarly, and thus obtain popularity. Those Romans who possessed very many slaves, had one nomenclator, who knew the names of all of them.

NOMINALISTS, in dialectics. A clear view of nominalism depends upon a proper understanding of the scholastic philosophy. Charlemagne had established schools (*scholæ*) for the education and formation of clergymen, in which the (so called) seven liberal arts (the *trivium* and *quadrivium*) were taught. As in those times research and speculation were not allowed to go beyond the dogmas of the church, philosophy, or rather dialectics, applied itself only to theology. It was at first enthralled by the fetters of the schools, and, at a later period, by the fear of the imputation of heresy. Thus originated, in the limited field to which the human mind was confined, a system of dialectics, which sought satisfaction in logical subtleties and empty forms, but which, however, tended much to exercise the acuteness of the European nations. A great schism in scholastic philosophy was caused by (the so called) *nominalism*, the founder of which was John Roscellin, canon of Compiègne, who maintained, among other doctrines then considered heresies, that all general ideas are mere words, *nomina*, names (*flatus vocis*). The *Realists* (from *res*, thing), on the other hand, maintained, that general ideas are not formed by the understanding, but are founded in reality in the objects themselves; are, in fact, the essence of the things themselves. The doctrine of Roscellin was condemned at Soissons, 1092, and the realists, who disagreed among themselves only upon some unimportant points, became the predominating school. But in the beginning of the fourteenth century, the dispute of the nominalists and the realists was revived by the English Franciscan William of Occam, a scholar of the famous Duns Scotus (who taught at Paris); in such a way that the nominalists were at length victorious. The philosophical adversaries gave vent to their feelings, in the spirit of the time, by blows. (See D'Israeli's *Curiosities of Literature.*) Among the supporters of nominalism should be mentioned the celebrated John Buridan of Bethune (1350), Robert Holcot (died 1349), Gregory of Rimini (died 1358), Henry of Oyta, Henry of Hessia (died 1397), Nicholas Oresmius (died 1382), Matthew of Cracow (died 1410), Gabriel Biel (died 1495). The nominalists were, indeed, often persecuted (in Paris, 1339, 1340, 1409, 1473); but they gradually gained the ascendency in the universities of France as well as in Germany. They are memorable in the history of philosophy in the middle ages, since from them proceeded a spirit of more liberal investigation, independent of dogmatic theology—a spirit which opened the way to the higher philosophy of subsequent times.

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[*] In a note near the end of chapter ix. of the abbé de Pradt's *L'Europe après le Congrès d'Aix-la-Chapelle*, it is stated that, "before the revolution, the number of noble families in France did not exceed 17,500. Reckoning five individuals to a family, there might have been about 90,000 nobles. The disasters of the revolution must have reduced them to less than 40,000."

NON, Jean Claude Richard de Saint, member of the academy of painting and sculpture at Paris, born 1727, died at Paris, November 25, 1791. He is known for his *Voyage pittoresque de Naples et de Sicile* (1782—86, 5 vols., fol.), which is principally esteemed for the (417) plates. He himself etched with much ability. Besides the engravings published with his travels, he also published a number of engravings from antiques and works of Le Prince, Boucher, and Fragonard. See *Denon.*

NON, or NUN. See *Niger.*

NON-ACTIVITY, Principle of, in the law of nations. See *Neutrality.*

NON COMPOS MENTIS. A distinction is made between an idiot and a person *non compos mentis*, the former being constitutionally destitute of reason, the latter deprived of that with which he was naturally endowed. But, to many purposes, the law makes no distinction between the two. It is a general maxim of the law that a person not possessed of reason cannot bind himself by contract, for he is incapable of giving that consent which is the foundation of all obligation. And it makes no difference, in this respect, whether the incapacity arises from a temporary mental alienation or a natural idiocy, except that in the latter case the act of an idiot is absolutely void, whereas that of a lunatic is only voidable at the election of the insane person or his guardian. A maxim was formerly supposed to have crept into the English law, which, in some degree, deprived persons, subject to temporary insanity, of the advantage of the doctrine, that they could not bind themselves by contract while in this state. This maxim was, that no one should be permitted to stultify himself, that is, to say that when he made such a deed or contract, he was bereft of his reason; for, said the judges, when a defendant made this plea, how can you remember that you were *non compos mentis?* Sir William Blackstone exposes the absurdity of this maxim, which was adopted, says Mr Fonblanque, "in defiance of natural justice and the universal practice of all civilized nations of the world." The maxim has been disregarded by English judges in some cases, and there is no recent evidence of its being now considered a part of the English law. Another very material consideration respecting persons destitute of reason, is the custody and treatment of them, which very naturally belong to their relatives; but it would be totally unsafe to leave them absolutely to determine when any one is insane. It very frequently happens, indeed, that the relatives or friends of a person deranged, restrain and confine him without any intervention of a magistrate, or any legal process for determining the fact of his mental alienation; and instances have occurred of the greatest cruelty and abuse practised under pretence that the subject of them was *non compos mentis;* and the occurrence has been made the foundation of incidents in fictitious narratives. Such abuses do not take place, however, from a want of provision in the laws to protect the individual from them; for any person under arrest and detention for any crime whatever, has a right to be brought before a magistrate on a writ of *habeas corpus*, that the cause of his restraint may be inquired into. This process affords an immediate remedy, if any one takes sufficient interest in the welfare of the person detained to make application for it in his behalf. Besides this remedy, the laws of some states provide a precautionary process, whereby the fact of mental incapacity or alienation is previously inquired into before personal restraint is permitted, and, in general, such previous proceedings must be had in order to take from any person the management of his property.

NON-CONDUCTOR. See *Caloric* and *Electricity.*

NON-CONFORMISTS; those who refuse to join the established church in England. The name was at first particularly applied to those clergymen who were ejected from their livings by the act of uniformity in 1662. Their number was about 2000. The act required that every clergyman should be reordained, if he had before received episcopal ordination; should declare his assent to every thing contained in the book of Common Prayer; take the oath of canonical obedience; abjure the solemn league and covenant; and renounce the principle of taking arms against the king. All the royal promises of toleration and of indulgence to tender consciences were thus eluded and broken. The Presbyterians, Independents, &c., refused to conform, and were exposed to the most cruel persecutions. By the five mile act (1665), it was enacted that no dissenting teacher, who would not take the oath above-mentioned, should approach within five miles of any corporation, or of any place where he had preached after the act of oblivion; this act was intended to deprive them of all means of subsistence. Other acts of a similar character were passed; but, on the accession of William III., these penalties and disabilities were removed by the toleration act. Some of these oppressive provisions were revived during the reign of queen Anne, but were finally repealed in 1718. The name *Nonconformists*, in consequence of this change of circumstances, gave way to that of *Dissenters.* The chief dissenting sects are the presbyterians, independents, baptists, quakers, methodists, and unitarians, the catholics not being commonly comprehended under this term. (See *Catholic Emancipation*). The statute 53d Geo. III., c. 60, repeals so much of former acts as excepted persons denying the Trinity from the benefit of the toleration act, or imposed penalties on such persons. Protestant dissenters were thus at least practically delivered from penal restrictions in the exercise of their religion. The repeal of the corporation and test acts in 1828, removed the civil disabilities under which they had previously been placed. The protestant dissenters are estimated to be at least one-half of the population. See *Ecclesiastical Establishments, Puritans.*

NONES. See *Calendar.*

NON-JURORS. See *Jacobites.*

NONNUS; a later Greek poet, who lived, according to some, in the beginning, according to others, at the end, of the fifth century. He was born at Panopolis, in Egypt. He is the author of a poem entitled *Dionysiaca*, in forty-eight books, in which the expedition of Bacchus (Dionysus) to India is described. The style is inflated and prolix; the descriptions go too much into detail; the epithets are often unnecessarily accumulated and far-fetched; but the versification is good, and the tone is animated. Nonnus also wrote a paraphrase, in verse, of the gospel of St John, which may serve as a commentary, being very perspicuous, though not very poetical.

NONOTE, Claude François, a Jesuit, member of the academy of Besançon, born 1711, devoted himself principally to ecclesiastical history and to theology, and distinguished himself by his *Erreurs de Voltaire* (Avignon, 1762, 2 vols.; 5th edition, 1770, 12mo), which display much learning, and are written in a moderate tone. His purpose is to correct the errors and false statements, made partly from ignorance, partly from prejudice, by Voltaire, in his *Essai sur les Mœurs et l'Esprit des Nations;* but Voltaire overpowered him by his wit. Nonote died at Besançon, September 3, 1793.—See *Œuvres de l'Abbé Nonote* (Besançon, 1818, 7 vols.)

NONPAREIL; a sort of small printing type; as, for example, a b c.

NONSUIT. Where a person has commenced an action, and, at the trial, fails in his evidence to support it, or has brought a wrong action, he is nonsuited. There is this advantage attending a nonsuit, that the plaintiff, though he pays costs, may afterwards bring another action for the same cause, which he cannot do after a verdict against him.

NOOAHIVA, or NOOKAHWA. See *Washington Islands.*

NOOTKA SOUND; a bay of the North Pacific ocean, on the western coast of North America, discovered by captain Cook in 1778; lon. 126° 36′ W.; lat. 49° 35′ N. The sound embraces several islands. The water is from forty-seven to ninety fathoms deep. There are many anchoring places and good harbours. The shores are inhabited by Indians, and the land is hilly. The climate is much milder than in the same latitude on the eastern coast.

NORDENEI, or NORDERNEY; a small island on the coast of East Friesland, to which there is a foot-path from the continent at low tide. On the north-western side is a village, with 550 inhabitants (mostly seamen), and an establishment for sea-bathing, much resorted to during the summer. On the south-east side are downs from forty to eighty feet high.

NORDLINGEN, a town in Suabia, with 7560 inhabitants, which, in 1802, came into the possession of Bavaria. The Swedes were defeated here, Sept. 6, 1634, for the first time on German ground. (See *Thirty Years' War*). The battles of 1645, 1796, and 1800, have also contributed to make the place memorable.

NORE. See *Thames.*

NORFOLK, a maritime county of England, bounded north and east by the German ocean, south by Suffolk, and west by Cambridgeshire and the Washes. Its extreme length is fifty-nine miles; and its breadth, from north to south, thirty-eight. Prior to the Roman invasion, it was inhabited by the warlike *Iceni,* celebrated by Tacitus on account of their insurrection against the Roman government, under their brave but unfortunate queen Boadicea. It afterwards formed the northern part of the kingdom of East Anglia, whence its name Nord-folke. The county contains one city, Norwich, and thirty-two market-towns, of which the principal are, Yarmouth, Thetford, Lynn Regis, Cromer, Dyss, and Wymondham.

Game of various kinds is abundant throughout the county, on some manors the pheasants being so numerous as to detract considerably from the profits of the farmer: on the sandy heaths are found great multitudes of rabbits. The air in the marsh districts is cold and damp, and the climate is reckoned unhealthy, agues having been here so prevalent, as to have given rise to the proverbial expression of being "arrested by the bailiff of Marshland," to denote a fit of the ague. Where the soil is sandy, the atmosphere is salubrious, mild, and agreeable. The products of the county are various, according to the soil and situation. The lighter arable lands afford good crops of barley, much of which is made into malt and exported. Wheat is much cultivated in the stronger soils; but the growth of turnips forms the distinguishing characteristic of Norfolk husbandry, this useful root having been introduced from Hanover in the reign of George I. by lord Townshend; and it is more generally raised here, and in higher perfection, than probably in any other part of the kingdom. Much buckwheat is likewise grown on the light lands, and is used as food for swine and poultry; mustard is cultivated as a regular crop on the western border of the county; flax around Downham; hemp in the neighbourhood of Old Buckenham; saffron is produced in several parts of Norfolk; and besides these, may be reckoned among the agricultural products, peas, beans, and vetches or tares; cole-seed, clover, and other artificial grasses; succory, cabbages, mangel-wurzel, carrots, and potatoes, of which last the culture is increasing as a regular field-crop. The fenny parts of the county furnish abundant pasture for milch kine, which produces great quantities of butter, sent to London for sale under the name of Cambridge butter. Scottish and other cattle are fattened for the supply of the metropolitan and nearer markets; and sheep are fed here, of a hardy, active, and rather small breed, much esteemed for the excellence of the mutton. Population of the county in 1831, 390,054.

NORFOLK, Duke of. See *Howard, Thomas.*

NORIA. The machine used in Spain under the name of *noria,* consists of revolving buckets, like the Persian wheel. But instead of a single wheel, two drums or trundles are employed, and the buckets are attached to ropes or chains passing round them. In Spain, earthen pitchers are said to be used, but in other countries wooden buckets are employed, like those of an overshot wheel.

NORICUM was, among the Romans, that part of the south of Germany which is situated between the Save, the lake Pelso, Rhætia, Vindelicia, and the Danube; but its boundaries were not the same at all times. The Celts inhabited this country.

NORMAL YEAR, in German history; the year 1624, because, in the peace of Westphalia, the state of the ecclesiastical rights and privileges, as they existed on January 1, 1624, was taken as the standard for the regulation of the ecclesiastical relations between the three sects in Germany.

NORMANDY; an ancient province in the north of France, bounded N. by the channel, E. by Picardy and Isle de France, S. by Maine, and W. by Brittany. It was divided into Upper and Lower Normany; Rouen was the capital of the former, Caen of the latter. It is now divided into five departments (q. v.), containing a population of 2,000,000. It is one of the richest and most fertile parts of France. The Norman is distinguished for intelligence and shrewdness. It derived its name from the Normans, who took possession of it in 912, and became annexed to England, through the accession of William, duke of Normandy, to the English throne. (See *Normans.*) Philip Augustus wrested it from John, and united it to France, in 1203. It was afterwards several times invaded by the English, but finally recovered by the French, in 1450.

NORMANN EHRENFELS, Charles Frederic Lebrecht, count of, born at Stuttgard, in 1784, died at Missolonghi, while in the Greek service, in 1822. See *Greece, Revolution of.*

NORMANS, or NORTHMEN; the inhabitants of the ancient Scandinavia, or Norway, Sweden, and Denmark. This name was given to them in the Netherlands, in Germany, and France; in Britain they were called *Danes.* They were fierce and warlike tribes, who made piratical expeditions to all parts of the European seas, plundering by land and by sea, and often overrunning large tracts of country, in which they practised every enormity. "They had scarcely any inducement," says Mackintosh

(*Hist. of Eng.*), "to spare countries which they visited only to plunder, and where they did not hope to dwell; they were less than others liable to retaliation, and they had neither kindred, nor family, nor home. They were, perhaps, the only barbarians who applied their highest title of magistracy to denote the leaders of piratical squadrons, whom they termed *vikingr*, or *sea kings.* Not contented with their native and habitual ferocity, some of them (called *Berserker*) sought to surpass their companions by working themselves into horrible and temporary insanity." The poverty of their country compelled them to adopt this means of subsistence, and their religion inspired them with a love for daring enterprises, since it taught them that warriors, fallen in battle, were admitted to the joys of *Valhalla*, the northern paradise. (See *Northern Mythology.*) They began their piratical excursions in the first part of the ninth century, and soon covered the sea with their boats, and ravaged the coasts of England, Germany, Friesland, Flanders, and France. Under the feeble reigns of Charles the Bald and Charles the Fat, they ascended the rivers to the very heart of France, and plundered Paris itself. It became necessary to purchase their retreat with gold. Their incursions into France were afterwards renewed, and Charles the Simple was obliged (912) to cede to them a part of Neustria (q. v.), which was afterwards called, from them, *Normandy*, and to give his daughter in marriage to Rollo, their chief. Rollo embraced the Christian religion, was baptized under the name of Robert, and became the first duke of Normandy, and a vassal of the king of France. His followers received the religion of their leader, and abandoned their roving and piratical habits. (See *France*, divisions *History*, *Language*, and *Literature.*) Britain was, for about two centuries, desolated by the Danes, as they were there called. Egbert (q. v.), in the beginning of the ninth century, had no sooner made some approaches towards a regular government, and the establishment of tranquillity, than the "Scandinavian heathens," as the Saxons termed them, made their appearance. Alfred (871—901) finally delivered the country from the invaders, after they had subdued the whole land except the "isle of the nobles," into which the king had retreated with a few nobles. But the relief was only temporary: they returned, under his successors, in greater force, obtained possession of the northern and eastern part of the country, and in the beginning of the eleventh century, three Scandinavian princes (Canute, Harold, and Hardicanute) ruled over all England for the space of about twenty-five years. (See *Britain.*) The Saxon line was then restored; but, in 1066, William, duke of Normandy, obtained the English throne. (See *William I. the Conqueror.*) This conquest, as it is commonly called, had a most important influence on the Saxon manners, language, and constitution, which had hitherto escaped with little change, and is therefore one of the most important epochs in English history.—See Thierry's valuable work, *Histoire de la Conquête de l'Angleterre par les Normands, de ses Causes et de ses Suites jusqu'à nos Jours* (Paris, 1825), and Hallam's *Middle Ages*, ch. viii. The Normans also established a new kingdom in Naples, in 1016. (See *Sicilies, the Two.*) According to the Russian Historian Nestor, the Warangians, or Varangians, who founded a kingdom in Russia, under Ruric (862), were Normans. The foreign expeditions of the Northmen gradually diminished their numbers and strength at home, and rendered them less formidable.—See Depping's *Histoire des Expéditions maritimes des Normands et de leurs Etablissements en France au 10me Siècle* (Paris, 1826); Wheaton's *History of the Northmen* (1831).

NORTE, DEL, or RIO BRAVO DEL NORTE, a river of Mexico, which rises in the Rocky mountains, near the sources of the Arkansas, about lat. 41° N., runs S.S.E., and empties itself into the gulf of Mexico; lon. 96° 40′ W.; lat. 26° N. It serves but little the purposes of navigation, owing to the sand bars in the flat country, and the mountains in the upper part. It is, however, navigable for boats and canoes in various parts of its course. Length, about 2,000 miles.

NORTH; a department of France. See *Department.*

NORTH, Francis, baron Guildford, lord keeper of the great seal under Charles II. and James II., was born about 1640, and became a student of St John's college, Cambridge, after which he entered at the Middle Temple, and was regularly called to the bar. He gradually made his way to the first dignities of his profession, rather by his prudence and dexterity than by extraordinary talents. He was made solicitor-general in 1671, when he received the honour of knighthood; in 1673, he was made attorney-general; the next year, chief-justice of the common-pleas; and, in 1683, lord keeper, when he was raised to the peerage. He died in 1685. Besides some papers in the Philosophical Transactions, lord Guildford was the author of a Philosophical Essay on Music, which contributed to the improvement of the art.

2. Sir *Dudley North*, brother of the lord keeper, engaged in commercial pursuits, and became an eminent Turkey merchant. He was afterwards one of the lords of the treasury in the reign of Charles II. He wrote Observations on the Manners, Customs, and Jurisprudence of the Turks. He died in 1691.

3. Doctor *John North*, another brother, was born in 1645, and educated at Jesus college, Cambridge, where he obtained a fellowship. In 1672, he was chosen professor of Greek, and the following year he was created D. D. Doctor North was an admirer of Plato, a selection of whose dialogues, including Crito, Phædo, with the *Apologia Socratis*, he published in Greek and Latin (1673, 8vo). His death took place in 1683.

4. *Roger North*, a younger brother of the same family, attorney-general under James II., principally merits notice as the historian of his family. His life of the lord keeper (lord Guildford, 1734, 4to) was reprinted in 1808 (2 vols., 8vo); and his lives of Sir Dudley and doctor John North (1744, 4to) appeared in a new edition with the preceding (3 vols., 8vo, 1826).

NORTH, Frederic, earl of Guildford, an English statesman of the same family with the foregoing, was the eldest son of Francis, second earl of Guildford, and was born in 1732. He received his education at Eton school and Trinity college, Oxford, after which he passed some time at Leipsic. Returning to England, he obtained a seat in the house of commons, and, in 1759, was appointed a commissioner of the treasury. On the resignation of lord Bute, in 1763, he was made head of that board, which post he held till 1765; and the next year he was made joint receiver and paymaster of the forces. At length, in 1767, he became chancellor of the exchequer, and, in 1770, first lord of the treasury. His administration lasted till 1782, during a period of peculiar difficulty and danger. Having accepted of office at a time when the court party had become unpopular, on account of the secret influence supposed to be possessed by lord Bute, something of that unpopularity attached to the whole course of lord North's ministry. But this was greatly augmented by the contest with the North American colonies, which ended in the loss of that part of the British empire, after the expenditure of a vast deal of the national wealth, and the sacrifice of multitudes of lives. For this disastrous measure of subjugating America, the premier appears to have been a sincere advocate; and, in defending his proceedings against the attacks of Mr Fox and his party, in parliament, he evinced a degree of political skill and resolution which would have done honour to a better cause. After his dismission from office, a league was formed between his lordship and the Whigs which led to the famous coalition ministry; but this heterogeneous administration lasted only a few months, after which lord North held no responsible station in the state. He succeeded to the earldom of Guildford in 1790, on the death of his father, and died in 1792. Lord North was much esteemed in private life, and was distinguished for urbanity of manners, and a turn for repartee. He was afflicted with blindness several years before his death, and his political antagonist, colonel Barré, was subject to the same misfortune. Replying to some observations of the colonel, in the house of commons, lord North said, "Notwithstanding the hostility which the honourable gentleman opposite has shown towards me, yet I am certain that there are no two persons in the world who would be more happy to see each other."

NORTH AMERICA; that part of the continent of America which lies north of lat. 8° 46′ N. The whole of the northern coast has not yet been visited; but from 108° W. lon. to Beering's straits, the whole of which space has been explored, with the exception of 160 miles, the most northern point known is in 71° 23′ 39″; and there is little reason to doubt that the portion of the coast to the east of 108° (about twenty degrees of longitude), yet unexamined, preserves nearly the same parallel. Exclusive, therefore, of Greenland and the other islands belonging to America, in the Arctic ocean, and on the eastern and western coasts, the main land of North America extends from about 8° 46′ to 72° N. lat., and from about 55° 30′ to 168° W. lon. The greatest breadth is in about lat. 52°, where it is 74° of longitude, or 2500 geographical miles. Its greatest length from north to south is probably in the meridian of 100°, and is about 3300 miles. We have already given an account of the aborigines, the principal civil and natural divisions, and of the progress of discovery, under the heads *America, Americus, Columbus, Cabot, Louisiana, North Polar Expeditions*, &c., *Mexico, Central America, Indians, Indian Languages*, which it is unnecessary to repeat here.—See Murray's *North America* (2 vols., 8vo, 1829), and the *Memoir of Sebastian Cabot* (Philadelphia, 1831). From Hudson's straits the coasts tend south-easterly to cape Charles (Labrador), without presenting any remarkable indentation. From that point, they run south-westerly, with numerous considerable gulfs, such as the gulf of St Lawrence, the bay of Fundy, Massachusetts, Delaware, and Chesapeake bays, and Pamlico sound, to the southern point of Florida; whence, winding round the gulf of Mexico, and passing the peninsula of Yucatan, they border on the Caribbean sea. Crossing the isthmus of Darien, we find the western coast, lying on the Pacific, takes a general north-westerly direction, forms the gulf of California, and Nootka sound, and terminates at Beering's straits, which separate Asia and North America. A great mountainous chain covers the western part of North America with its numerous ridges. It consists of several ranges, running parallel with the coast, and extends, without interruption, south-south-east, from the northern coast to the west of Mackenzie's river, in lat. 70°, to the isthmus of Darien, where it joins the Andes. The northern part bears the name of *Rocky mountains*; the more southerly portion takes that of the *Mexican Cordilleras*. The Alleghany mountains, which run nearly parallel with the eastern course, are the only other considerable chain. The sources of the great rivers which rise in the central part of the continent, and flow into the Arctic and Atlantic oceans and the gulf of Mexico, do not appear to be separated by any mountainous country. The Missouri and the Mackenzie, the St Lawrence and the Mississippi, with the Saskashawan, which empties through lake Winnipeg into Hudson's bay, —all have their sources in the elevated region which lies to the east of the Rocky mountains. The Columbia is the only great river of North America, on their western declivity. The region in which these great streams rise is itself cold and sterile, forming, for several hundred miles to the west of the Rocky mountains, a sandy, barren, and uninhabitable desert. The great lakes of the interior are connected with the ocean by large rivers. Slave lake communicates with the Arctic ocean by Mackenzie's river, lake Winnipeg with Hudson's bay by the Nelson, and lakes Superior, Michigan, Huron, Erie, and Ontario with the Atlantic, through the St Lawrence. Too little is known of the greater part of the continent west of the meridian of 97° W., and north of 35°, and of the region north of the Canadas, to enable us to give a complete view of the physical geography of North America.

It was formerly thought that North America was less rich in precious metals than South America; but Humboldt has shown that the quantity produced in Mexico is superior to that of all the other Spanish possessions. Gold is found in Mexico in alluvium, and in primitive mountains, and in the United States. The Mexican silver mines are inexhaustible. Iron abounds in Russian America, Canada, and the United States. There are mines of copper; and that metal is found native on the southern coast of lake Superior, and in the northern parts of the continent, near the Coppermine river. The Labrador feldspar is celebrated. Anthracite and bituminous coal are abundant in the United States. Tin is produced in Mexico, and lead in great quantities in the United States. Salt is plenty in all parts of North America: it is obtained on the surface of the ground, in springs or in mines. Sulphur and all sorts of marble are found in different places.

The immense forests contain pines and firs of an extraordinary height, oaks of various species, walnut and chestnut trees, yew, ash, beech, birch, cypress, elm, willow, poplar, alder, lime, and other trees common to the other continent, but often of different species. Among those which are peculiar to America are the magnolia, the tulip-tree, the acacia, and many shrubs which bear beautiful flowers; the sassafras, the red mulberry, the wax myrtle, &c. In the forests of the warmer regions are the palms, cacao, mahogany, cocoa, and cotton trees. Besides these native productions, the orange and lemon trees, the coffee shrub, the sugar-cane and the indigo plant have been introduced by the Europeans. The banana, agave, potato, cactus or cochineal plant, &c., are also cultivated, and the odoriferous pod of the vanilla is gathered in the forests. All the fruits, cerealia, and useful plants of the old world, have been naturalized and cultivated with success, and North America can now furnish Europe with apples and flour. Maize and tobacco are natives. The northern regions are almost destitute of vegetation.

The vast prairies and savannas are peopled with immense herds of bisons, elks, moose, deer, antelopes, &c. Among the other animals are the beaver, the ermine, the marten, the otter, musk-rat, squirrel, &c. The porcupine is also found in North America.

The musk-ox, the reindeer, and the white bear are found only in the most northern regions. Carnivorous animals, such as the bear (the black bear and the grisly bear), the wolf, the cougar (panther), lynx, &c., are numerous in the unfrequented parts of the country. All the domestic animals of Europe—the horse, ox, sheep, goat, ass, dog, hog, and cat—have been introduced into America, and some of them have increased to such a degree that they form large herds in a wild state. Bees are numerous in the forests. North America harbours some dangerous reptiles, of which the rattlesnake is the most formidable. Mosquitoes are not less busy on the borders of the Arctic sea than on the shores of the Atlantic. The turkey is a native of America, and was first introduced into Europe in 1525. The mocking-bird is celebrated for its miraculous power of song; the humming-bird for its beauty and diminutive size; the wild pigeons darken the air. There are numerous other birds peculiar to this continent, and many, such as the eagle, owl, crow, hawk, swan, goose, duck, &c., which present specific differences from those of the same name in the eastern continent. The coasts and inland waters swarm with waterfowl. Alligators are found in the southern rivers; pikes, sturgeons, trout, eel, and salmon fill the waters. The great bank of Newfoundland and the neighbouring coasts abound in cod. The seal, walrus, &c., are found. For the natural history of North America, the reader may consult Godman's *Am. Nat. Hist.* (*Mastology*), and Richardson's *Fauna Bor. Am.*; Wilson's and Audubon's *Ornithology*; Michaux's, Barton's, Nuttall's, Bigelow's botanical treatises; Cleaveland's *Mineralogy*; Silliman's *Am. Journal of Science*, &c.

The climate of North America is known to differ from that of the eastern continent, the quantity of heat in the same parallels of latitude being less in the former than in the latter. The difference, however, is not so great as was formerly supposed. It has been considered that there was a difference of temperature of several degrees between places under the same parallel on the Atlantic coast and the Mississippi Valley. This supposition, founded on the fact, that certain vegetable productions were found in more northern latitudes in the latter than in the former, has been shown to be erroneous by Humboldt. That distinguished philosopher explains the phenomenon by an examination of the form and direction of the valleys in these two regions. In the Atlantic region they are transverse, or run east and west, and therefore the propagation of plants northwardly was obstructed, while the great Mississippi Valley opens to the south, and therefore presents no obstacles to the migration of vegetables towards the north. The temperature on the western shores of North America seems to be considerably higher, however, than in the regions east of the Rocky mountains, and to correspond very nearly with that of the Atlantic countries of the eastern hemisphere. Further details on this subject will be found under the heads *Climate*, *Temperature*, and *Winds*.

The *Geology of North America*, or an account of the different rocks which constitute the material of this continent, and a description of the various modes of arrangement observed by them, is no less a subject of economical interest than of scientific curiosity, since to the existence of certain rock formations is due the fertility of a country in agriculture, and its richness in coal, salt, the useful metals, and other mineral productions necessary to human support; and from a knowledge of their relations, many interesting conclusions are derived relating to its antiquity and those great revolutions which it experienced prior to all historical records. Commencing this sketch with the northern extremity of the continent, where the severity of an arctic climate will scarcely allow of a wretched existence even to the hardy Esquimaux and Greenlander, the rock strata are in many places incapable of being observed, except for a short period during the year, while in others, they remain for ever concealed by those immense accumulations of ice, which, from their extent and perpetuity, seem almost entitled to the consideration of geological formations.* Notwithstanding the obstacles to geological research, however, much information, with regard to the formations of this remote region, has been collected through the voyages and travels of captains Franklin and Parry. The prevailing character of these countries is primitive, with occasional tracts of transition and secondary. An extensive coal formation occupies the banks of the Mackenzie river, where the beds of lignite are subject to spontaneous combustion Bituminous coal, also, which some geologists have conceived belonged only to temperate latitudes, is found at Melville island and in Old Greenland.† A larger section may next be considered, comprehending Labrador, the two Canadas, and an extensive tract upon the northern side of the almost unbroken chain of lakes running from lake Superior to the Great Slave lake. Labrador, with its succession of lofty and naked hills, many of which attain the elevation of several thousand feet, may be considered as belonging almost exclusively to the earlier formations; while the country upon the north of the St Lawrence, though abounding in this class, also contains extensive transition and secondary deposits. The remainder of the present tract, from the outlet of lake Ontario to its distant western extremity, is remarkable for a continuous chain of primitive rocks, whose breadth, except in one place, where it was 240 miles, has not been determined.‡ In turning to view the geological features of another extensive portion of the American continent, our attention is arrested by the Rocky mountains, the most elevated land upon its surface, and which skirt its western coast from the isthmus of Panama to the Arctic ocean, and are, no doubt, a continuation of the Andes of the southern hemisphere. Although but partially explored, their primitive character is clearly established. Their eastern sides are covered, to the height of 200 or 300 feet, with a sand-stone consisting of the ruins of the granitic rocks upon which it reposes, whose disintegration was apparently effected by the gradual agency of an ancient ocean once occupying the immense plane or basin now extending eastward from the base of these mountains to the great chain of the Alleghanies. This vast basin, which has for its boundaries the Rocky mountains, the primitive chain bordering upon the great lakes before alluded to, the Alleghany mountains, and the gulf of Mexico, and which includes twenty-five degrees of latitude, and nearly double that number of degrees of longitude, is one great secondary formation. It is free from any considerable inequalities, though obviously not level; since its surface is drained by the three great streams, the Mackenzie, the St Lawrence, and the Mississippi. It abounds in all those peculiar aggregates which belong to this formation, as well as in their ordinary accompaniments—coal, gypsum and salt, lead and iron. Along its eastern base, so far as it has been explored in the Missouri country, it contains the remarkable sandy desert, whose width is between 500 and 600 miles.* An equal degree of simplicity characterizes the structure of that portion of the North American continent, which still remains to be mentioned. The south-eastern boundary of the secondary basin just described, following the irregular base of the Alleghanies, from the Alabama river to fort Ann, near lake Champlain, is the north-western limit of an extensive tract of transition, which runs still farther northward, pursuing the eastern shore of lake Champlain, in a narrow belt, to Canada. It varies in width from twenty to upwards of 100 miles, and its stratification follows a north and south, or a north-east and south-west direction, with an inclination from the horizon of less than 45°. The mountains of this tract consist of long, parallel ridges, whose outline is almost one unbroken line, and whose sides decline in gentle slopes. In Pennsylvania, it embraces an extensive and invaluable deposit of anthracite coal, and one also in the state of Rhode island, which, though considerably removed from the present district, nevertheless, belongs to the same class of rocks. Iron and lead are likewise among the contents of this formation. To the transition upon its eastern side succeeds the great primitive country of the United States. Towards its southern extremity, in the Carolinas and Georgia, its width is above 150 miles; but as it advances northward through the Middle States, where the transition is widest, its breadth decreases: when it reaches the Highlands of New York, it begins to widen, and spreads over nearly the whole of New England, continuing into Canada and New Brunswick, probably to the mouth of the St Lawrence. To this primitive mass, also, belongs all the mountainous country between lake Champlain, the river St Lawrence, and lake Ontario, which is separated from the foregoing district by the narrow belt of transition occupying the eastern side of lake Champlain. The strata of this formation run from a north and south to a north-east and south-west direction, with a dip to the southward of more than 45°. Its greatest elevations are found in the White mountain range, where a few peaks attain a height of more than 6000 feet. The surface presented through the primitive country is that of circular and smoothly swelling masses, with rounded tops. It abounds, throughout its whole extent, and especially in New England, where it has been more carefully explored, with all those simple minerals, existing in similar formations in other countries. Its metallic deposits, which are mostly in the form of beds, are numerous and valuable; among which may be mentioned magnetic and hæmatetic iron ores, native gold, and copper pyrites. The eastern boundary of the primitive is a line commencing near Alabama river, and running northward through Augusta, upon the Savanna river, west of Camden, South Carolina, and near Aversboro, North Carolina, by Richmond, Philadelphia, and Trenton, and north of New York, pursuing the shores of the Atlantic. Within the primitive country thus defined, however, there exists, besides the transition tract of Rhode Island, a narrow strip of secondary, commencing at Northfield (Mass.) upon the Connecticut, and running through to the sea at New Haven, where it ends to recommence again upon the south side of the Hudson from whence it pursues a south-westerly course to the Rappahannock. It consists of the old red sand-stone, upon which repose, at several places, what are now regarded as the older volcanic rocks, amygdaloid and green-stone trap. The same formation also occurs farther north, in Nova Scotia. To complete our present sketch of the United States, we have only to notice what has, till lately, been denominated the *tertiary* formation of North America. It commences to the north in a clustre of islands situated south of cape Cod, and proceeding south, embraces Long Island, and, recommencing upon the continent in the northern part of New Jersey, covers the vast extent of country between the coast and the Alleghanies, and is finally terminated in the Mexican sea. North of the Roanoke, the tide penetrates completely across it to the primitive; but, farther south, it becomes more elevated. It consists of beds of sand, clay, and marl, which contain lignite, the remains of marine animals, and vast quantities of shells. The distinction of this extensive district into two formations—the upper secondary, or a formation contemporaneous with the super-medial order of Phillips and Conybeare, and the tertiary was first established by professor Vanuxem and doctor Morton. The former of these consists of marl, highly argillaceous, and containing greenish particles, analogous to those which are found in the green sand, or chalk, of Europe. Its prevalent colour is a dark green, sometimes rendered brown by per-oxide of iron. It abounds in the following genera of shells, viz. terebratula, gryphœa, exogyra, ammonites, baculites, and belemnites. It occupies a great part of the triangular peninsula of New Jersey, formed by the Atlantic, and the Delaware, and Raritan rivers, and extends across the state of Delaware from near Delaware city to the Chesapeake; appears again near Annapolis, in Maryland; at Lynch's creek, in South Carolina; at Cockspur island, in Georgia; and several places in Alabama and Florida. It has also been noticed in numerous other localities, when the tertiary and alluvial coverings have been removed by natural or artificial causes; and there are good grounds for the opinion, that beds of ferruginous sand extend nearly the whole length of the Atlantic frontier of the United States, south of Long island, though, for the most part, concealed by the different members of the tertiary class. The tertiary embraces the islands of Nantucket, Martha's Vineyard, Long Island in part, Manhattan island, together with a fractional part of the adjacent coast of New York and New England. It likewise forms the Neversink hills, in New Jersey, the southern part of the peninsula of Maryland, from whence it pursues a southern direction, forming an almost continuous superficial mass over the country between the Alleghanies and the coast, to the Mexican sea. It is composed of lime stones, with mixtures of clay or sand, or both, in variable proportions; of clay alone; of clay with sand, forming loam; of beds of gravel, or of buhr-stone. It is marked by littoral shells, analogous to those of the tertiary deposits of the Paris and English basins. The fossils of the tertiary are generally found within fifteen or twenty miles of the primitive, the intermediate space being filled with clays of various kinds. The highest point to which this formation rises, is about 250 feet. It is near the line of junction with the primitive on Savannah river. Over the surface of these formations is everywhere distributed alluvial gravel, containing large masses of granite and other primitive rocks; and in many places upon the coast it is covered with accumulations of alluvial sands.*

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* A single deposit of this abundant substance in Greenland, the Rheinwald glacier, is said to be four miles long, by two in breadth, and from several hundred to one thousand fathoms in height, consisting of pure ice, precipitated from the neighbouring mountains, and arranged in perpendicular columns, with a cavern opening into its eastern side of great extent.—*Travels and Voyages of Captains Parry, Ross, Franklin, and Belzoni*, (London, 1826, p. 263).

† Captain Parry's Third Voyage.

‡ Captain Franklin's Second Expedition.

Concerning the geology of the southern part of North America, we are still exceedingly deficient in information, the attention of travellers and mineralogists having been so much absorbed with the richness and variety of the metallic deposits of Mexico, as almost wholly to have overlooked its geological features. We cannot, perhaps, better perform this part of our task, than by presenting the reader the recent observations of Mr Maclure, published in the twentieth volume of the American Journal of Science and Arts. "From the great range of the Andes spring all the subordinate mountains, forming large plains or valleys, either near their summit, or on the planes of their descent, on either side, on which planes, below the level of the principal range, when not covered by the volcanic formations, the greatest part of the primitive crosses out to day. On the tops, both of the great range and the subordinate heights, appears to be placed the seat of the mines, principally in transition, though some are thought to be in primitive schist, or marble; from which it would appear that the summits of the mountains are principally transition. This supposition is countenanced by the small quantity of well-defined primitive found in the vicinity, and by its appearing at a lower level on both sides, which seems to indicate that the primitive is the formation of the whole range." Mr Maclure adds a very ingenious theory to explain the origin of mineral veins. He remarked that the veinstones, in a majority of instances, were secondary, proving that the veins must have been filled from the surface; for it is difficult to conceive how, in a primitive range, like the Andes, the secondary could be ejected from below. "It has been considered," he remarks, "as a geological fact, that metallic veins can have no dependence or connexion with volcanoes, yet our total ignorance of many original natural methods of operation ought to make us cautious in restricting nature to any exclusive mode of action. The primitive mountains in the north have iron in abundance, but the precious metals have as yet been rarely found; nor are there any modern volcanic rocks. The same may be observed in the north of Europe. Sweden and the north of Germany have rarely silver and gold, and no modern volcanic rocks; and, on the southern continent of America, there seems to be a proportion between the gigantic volcanic formation and the abundance of the precious metals. If we suppose the convulsions and earthquakes that might precede the eruption of lava to the surface to have rent and cracked the shell, so as to give space to the formation of these veins, and the precious metals, converted into vapour, to penetrate through chinks that would not permit lava to pass, this vapour, meeting with the secondary, that was filling the vein from the surface, might form a mixture such as we find in most of the veinstones."

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* Long's Expedition to the Rocky Mountains.

* Geology of the United States, by William Maclure (Phil., 1817), Journ. Acad. Nat. Sci. (Phil., vol. vi.), and American Journal (vol. vii. and xiii).

The foregoing sketch furnishes, among others, the following general facts and inferences:—1. The North American resembles the European continent in the highly primitive character of its northern extremities; while it differs from it in the superior degree of continuity possessed by its great formations, as well as in the absence—leaving Mexico out of the question—of volcanic action, except such as is afforded by the partial deposits of secondary trap rocks. 2. The great ocean from which were precipitated the secondary sand-stones, gypsum, and coal of the immense basin lying between the Alleghanies and the Rocky mountains, appears to have found its outlet by the St Lawrence and Mississippi rivers. 3. The upper secondary and tertiary formations formerly have probably been more extensive upon the Atlantic coast, and once connected the islands now forming its northern boundary with each other and the main land. 4. After the deposition of the secondary and tertiary formations, the land has been broken up by the action of sudden and violent currents, which have strewed its surface everywhere with boulders or rolled masses, and given to the coast its present insular and peninsular form. 5. The strata embrace all those metalliferous and earthy compounds existing in them in other quarters of the globe, and exhibit throughout the same general relations elsewhere observed, and, consequently, must have resulted from the operation of those great laws, under the control of which the solid mass of the earth has been formed.

NORTHAMPTON. The county town of Northamptonshire is situated on the northern bank of the river Nen, near the centre of the county, sixty-six miles N.W. by N. from London. It is noted for the manufacture of boots and shoes, which is carried on upon a very extensive scale; currying and dressing of leather, lace-making, and the manufacture of brass and iron-work are also largely prosecuted here. A considerable share of trade likewise arises from the constant passage of travellers by stage-coaches, from London to Liverpool, Manchester, &c.; and from the facilities afforded for the transfer of goods in consequence of the communication made between the river Nen and the Grand Junction Canal in 1815. Population in 1831, 15,351.

NORTHAMPTONSHIRE, an inland county of England, being nearly in the centre of the kingdom. Its length from N.E. to S.W. is about sixty-five miles, and its breadth about twenty-four miles. When the Romans invaded Britain, this part of the island was inhabited by a tribe of people called Coritani or Coitanni, and at a subsequent period it was included in the Roman province styled Flavia Cæsariensis. Under the heptarchy it belonged to the kingdom of Mercia. This county has been the scene of some remarkable events. In 1460 a battle took place near Northampton, between the partisans of the houses of Lancaster and York, in which the former were defeated, and Henry VI., who was present, was taken prisoner. At Fotheringay castle, near Oundle, Mary, queen of Scots, was executed, in 1586. And at Naseby, on the north-western border of the county, the army of Charles I. was totally routed by Fairfax and Cromwell, in 1645.

Northamptonshire is proverbially reckoned a fine and pleasant county, which opinion derives confirmation from the number of noblemen's and gentlemen's seats contained in it. Formerly a large portion of its surface was occupied by the forests of Rockingham, Salcey, and Whittlewood; and though a great part of the wood-land has been appropriated to the purposes of tillage or pasture, these forests are still included among the crown lands, consisting at present of about 18,000 acres. The chief towns in this county are, besides Northampton, the city of Peterborough, and the market-towns of Daventry, Wellingborough, Kettering, Thrapston, and Oundle. Population in 1831, 179,276.

NORTH CAROLINA. See *Carolina*.

NORTH CAROLINA UNIVERSITY. See *Chapel Hill*.

NORTHCOTE, James; born in Plymouth, in 1746, where his father was a watchmaker, who designed him for his own business; but young Northcote, having a taste for the fine arts, and being flattered by praises bestowed on his early productions, pursued the practice of drawing and painting with so much assiduity, that doctor Mudge, a physician of that town, recommended him as a scholar to Sir Joshua Reynolds. He went to London in 1771, and became domesticated with that great artist. In 1776, he quitted him, and commenced business on his own account, with the full concurrence of his preceptor, and was eminently successful, his portraits having procured him both wealth and reputation. He wrote various papers in a work called the Artist. He also published Memoirs of Sir Joshua Reynolds, comprising Anecdotes of his Contemporaries (1813), and a Supplement (in 1815); and Memoirs of Titian (1830). He died in 1830.

NORTH-EASTERN PASSAGE. See *North Polar Expeditions.*

NORTHERN LIGHT. See *Aurora Borealis.*

NORTHERN LITERATURE. See *Scandinavian Literature.*

NORTHERN MYTHOLOGY. The interesting discoveries made by a more intimate acquaintance with the mythologies of the East Indies and Egypt, and a comparison of them with that of Greece (discoveries which, in the opinion of some scholars, prove the existence of a universal original religion—a pure deism, as some think—and, at all events, show the eternal thirst of man to explain the origin of nature, of himself, and, above all, of good and evil), justify us in assigning a separate place to the mythology of the North, which, even if its general traits were borrowed from Asia, must yet be considered as a distinct system. The northern mythology, in the systematic condition in which we now possess it, is the work of scalds, that is, of the ancient northern minstrels of Denmark, Norway, Sweden, and Iceland. Religion and civilization here, as is often the case, sprang from poetry: and here, also, as is so common, cosmogony (q. v.) was the basis of the religion—a cosmogony which, at the same time, proves the wild imagination of its authors, and the nature of the country where it originated. The following are its most important features: There were originally no heavens above nor earth below; but only a bottomless deep and a world of mist (*Nifiheim*), in which flowed the fountain that strives to devour every thing (*Hwergelmer*). Twelve rivers, called *Eliwagar*, issue from this fountain. When they had flowed so far from their source that the liquid they contained had become hardened, they ceased flowing, and froze into ice, and one layer accumulating over another, the great deep was filled up. Southwards from the world of mist was the world of light, or fire (*Musspellheim, Mispelheim*). From the former proceeded every thing dark and cold; from the latter, whatever is warm and light; a warm wind blowing from the latter upon the ice (the rays of the sun from Mispelheim encountered the ice from Niflheim) melted it. The drops became living by the power of him who had sent the wind; and from them sprang Ymir, the ice-giant. Under Ymir's left arm grew a little man and woman, and one of his legs begot a son from the other. From them proceeded the ice-giants. From the mixture of ice and heat originated, also, the cow Audumbla, from whose dugs ran four streams of milk, by which Ymir was fed. The cow supported herself by licking the salt stones of the ice. As she was thus one day licking the stones, lo, in the evening, human hair grew out of them; on the next day appeared a head; and, on the third, an entire man, called *Bure.* His son was Bor, who married Belsta, daughter of the giant Mountain-Gate. By her he had three sons, Odin, Wile, and Ve, who became the rulers of heaven and earth. The children of Bor were good, those of Ymir wicked; and they were constantly at war with each other. The sons of Bor finally slew the ice-giant, dragged his body into the deep, and from it created the world. Out of his blood they made the sea and rivers; of his flesh, earth; of his hair, grass; of his bones, rocks; and stones of his teeth and broken jaws; of his head they made the heavens, which they extended over the earth by its four ends, at each of which they placed a dwarf, Austre, Westre, Sudre, Nordre. Of the sparks and light which had proceeded from Musspellheim they made stars, and fastened them to the heavens, to give light to the earth. They threw Ymir's brain into the air, and it formed the clouds. As Bor's sons were once walking on the sea-shore, they found two blocks, of which they created a man, called *Askur* (ash), and a woman, *Embla* (alder). One gave them life and soul; the second, motion and reason; the third, the face, language, hearing, and sight. This cosmogony is plainly a northern view of nature; we here see nature passing from the death of winter into life, and the beginning of the world connected with the appearance of spring. It was natural that, to the early Scandinavians, ice should have appeared as the primeval matter, and that it should be represented as evil, because it destroys the life of nature. The whole cosmogony is therefore a physical allegory, not inferior to those of other mythologies. The creation of day and night, the sun and moon, is thus related: The giant Darkness (*Niörwi, Narfi*) had a daughter of the name of *Night* (*Nott*), dark and sombre like her race. She was thrice married, and bore to Nagelfari (Air, Ether) a son, Andur (Matter); to Anar (the forming principle) Jord (the Earth); to Dellingar (Twilight) Dagur (Day), who was light, like his paternal race. Alfadur now took Nott and Dagur (Night and Day) to the heavens, and gave them each a horse and car, to drive round the earth daily. Night rode first on her horse, Hrimfaxi (Blackmane), which every morning bedews the earth with the foam from his mouth. The horse of Dagur, Skinfaxi (Shiningmane), illumines, with his mane, the air and earth. Mundilfari (Mover of the Axis) had two beautiful children, Sool and Maan (Sun and Moon). Proud of the beauty of his daughter, he married her to Glemur, the god of joy. The gods, offended at his presumption, took away his children, and transported them to the heavens. Sool was employed in driving the horses of the car of the sun, and Maan those of the car of the moon, and to watch over her increase and decrease. So far the most ancient mythology, which creates giants (*jötun*) from the elements of nature. It is remarkable that, in this mythology, the giants dwelling around the original chaos produce the lords of the heavens, the earth, and lower regions; and giants, Titans and Cyclops are also the ancestors of the Grecian gods; and, in the Grecian as in the northern mythology, a new race of gods drives out the ancient; or, in other words, historical traditions were confounded with the original ideas of nature.

The ancient and modern systems seem to have their connecting point in Odin, as with Jupiter in the Greek system. We must doubtless distinguish an earlier and a later Odin. The former was the symbol and deity of light and the sun, and there are several interesting fables relating to him; as, for instance, of his marriage with the earth; his daily amour with the goddess of the waters, to whom he descends every night, to drink of her element from the golden cup; of the marriage of his rays with the vapours of mother Earth, of which the fruit is the god of thunder, &c. All these fictions, however, were transferred to the younger Odin, the chief of the council of the Aser. The Aser (Asiatics) are the new race of gods, which came in with the younger Odin, or descended from him. It appears, from northern chronicles, that, in the first centuries of the vulgar era, if not still earlier, Sigge, the chief of the Aser, an Asiatic tribe, emigrated from the Caspian sea and the Caucasus (probably driven out by the Romans) into Northern Europe. He directed his course northwesterly from the Black sea to Russia, over which, according to the tradition, he placed one of his sons as a ruler, as he is also said to have done over the Saxons and Franks. He then advanced through Cimbria to Denmark, which acknowledged his fifth son, Skiold, as its sovereign, and passed over to Sweden, where Gylf, who did homage to the wonderful stranger and his gods, then ruled. He soon made himself absolute master there, built Sigtuna as the capital of his great empire, and established a new code of laws and a new religion. He himself assumed the name *Odin*, established the priesthood of the twelve Drottars, who conducted the secret worship, and the administration of justice, and, as prophets, unveiled the future. He is also the god of song and war. (Gibbon and Münter consider Odin a Shaman, and his doctrine Lamaism.) He was the inventor of the Runic alphabet, and made himself dreaded as an enchanter. But the Aser, that is, these new gods of the scalds, are as follows: Odin, the god of gods, the first and oldest of all, who lives for ever: he sits upon the elevated throne Lidskjalf, whence he observes every thing in the universe, alone, contemplating his own being. By his side stands the spear, Gungner. He has twelve chief names, and 114 others, in the ancient Asgard. His swift steed is called *Sleipner*. From him and his wife Frigga are descended the gods, on which account he is called *Alfadur* (Father of All), or, according to some, more correctly, *Walfader* (Father of All who fall in battle—a title which belongs to him as the ruler of Valhalla). Frigga, wife of the king of gods, shares with him the wonderful throne, from which all countries are seen. She knows the fate of all mortals, but keeps it secret. Their sons are Thor, god of thunder—a symbol of physical strength, the strongest of gods and mortals, whose mighty step sounds like the storm, whose hammer, Miolner (the Crusher), crushes the hardest objects—and Balder, the youthful and beautiful god of eloquence and just decision, the innocent who appears brilliant as the lily, and in honour of whom the whitest flower received the name *Baldrian*. His wife, Nanna, daughter of Gewar, looks with modest admiration on the mind of her husband. She bears Forfete, the god of concord, who resembles the rainbow, when it descends from the dark cloud. He puts an end to all strife. His palace, Glitner, rests on pillars of gold. Niord, who shakes his vans in the roaring storm, so that every thing trembles, is the god of winds, of sailors, of commerce, and of riches. By his wife, Scada, a daughter of the mountain-giant Thiasse, he had the beautiful, beneficent, and mighty Frei and Freia. Frei, who floats in the shining garments of spring, is the ruler of the sun, and upon him depend rain and sunshine, plenty, or dearth. He rules in Alfheim, where the elfs dwell. Instead of a horse, he rides a boar with golden bristles. Gerda, Gymer's daughter, is his wife. Freia, Fraa, is the goddess of love. Her eye is an eternal spring; her neck and cheek light. The mildest and most bountiful of the gods, she is a friend of sweet song, and loves to hear the prayers of mortals. She mourns her lost husband, Odur, to whom she had born two daughters, Nossa, the model of all beauty and grace, and Gersemi. Tyr, a son of Odin, the fearless god, who wounds by a look, is lofty as a fir, and brandishes the lightnings of battle. All brave warriors are under his protection, though he is not properly the god of war, but rather of power and valour, and no friend of peaceful agreement. Of a different character is his brother Braga, the god of wisdom and poetry, which, from him, is called *Bragur*. He appears with a golden *telyn*, and strikes the cords, which emit a sweet sound. His wife is Iduna, who preserves the apples of immortality, which she offers in vessels of gold to the heroes at their entrance into Valhalla—those apples which alone preserve the eternal youth of the gods. Other sons of Odin are Hermode, the messenger of the gods, armed with a helmet and mail; Vidar, strong as Thor, the god of silence; and Wale, the god of the bow. Uller, son of Thor the Thunderer, is of a beautiful figure, master of archery and skating, who was invoked by those who engaged in single combat. A silver circle surrounds the down of his chin. His empire is Ydalir (that is, Rain-valleys).

The following gods are of a most mysterious character:—Hoder, the blind god, murderer of Balder, whose violent deed the gods never forget, but whose name they must never hear pronounced; Heimdal (Himindal), a son of nine gigantic sisters, born on the margin of the earth, a great mysterious god guards the Bifrost, the bridge to heaven (rainbow), against the giants. He sees as plainly by night as by day; his ear hears the grass grow in the field, and the wool on the lambs. He is represented with a pensive brow, his eye fixed upon his calm breast.

Among the goddesses, we must mention Laga, the first next to Frigga; Syra, the physician of the gods; Gesione, goddess of chastity, who, herself a virgin, protects all chaste virgins, and, if they die unmarried, takes them to her heavenly dwellings; Jylla, a virgin like Gesione, with beautiful locks, and a diadem of gold, is intrusted with the secrets of Frigga, whose messenger, Gna, floats about with the rays of the sun; Hlyn (Lyna) the Gentle, who kisses away the tear from the eye of the unfortunate, the goddess of friendship and good faith, who is united with several servants of the goddess of love; Siona, who awakens the first sweet feelings in the breasts of youths and maids, and disposes them to mutual love; Lobna (Loffna), endowed with the power to reconcile divided lovers; Wara, the goddess of marriage, who hears the secret vows and oaths of lovers, punishes the faithless, and unites the true; Snotra, the goddess of modesty, is the protectress of virtuous youths and maids; Wora, the all-knowing, penetrates every secret of the heart; Synia, the guard of heaven, is the goddess of justice and law, and exposes perjury.

A large ash (or an ash forest), called *Ygdrasil*, the tree of the world, stands over the well of time: its branches extend over the world, its top reaches above the heaven. It has three roots, one among the gods, another among the giants, and a third under Hela. Near the middle root is the fountain of wisdom, the fountain of Mimers. Near the heavenly root is the sacred fountain by which the gods hold their council, and make known their decisions. From these fountains rise three beautiful maids, the Nornas, whose names are Urd (the Past), Varande (the Present), and Skuld (the Future). They determine the fate of mortals, and aid or punish them by their ministers. On the top of the ash sits an eagle, looking far around; a squirrel (Rotatoskr) runs up and down the tree; four stags (Dain, Dynair, Dnalin, and Dyrathor) roam through its branches, and eat the bark; a serpent gnaws its root below; the trunk of the tree rots; but the holy maids water it from the sacred fountain, that it may not wither. From the leaves of the ash falls a sweet dew, the food of bees. Over the fountain sing two swans. Here are heard Heimdal's song of the fate of the tree of the world; the voices of the past, the present, and the future, in the council of the gods. The gods themselves seek to learn the wisdom of the Nornas, the stern goddesses who rule over all. On this account, they were much honoured; temples were built in their honour, in which their oracles were consulted.

The Valkyrias, or Disas, are awful and beautiful beings, neither daughters of heaven nor of hell; neither begot by gods, nor cradled in the lap of immortal mothers. Nothing is said of their origin. Their name signifies the "choosers of the slain" (from *wal*, a heap of killed, and *kyria*, to choose). They appear awful and horrid in the songs of the scalds;

yet we find them to be the beautiful maids of Odin, with helmet and mail, and mounted on swift horses. Heroes long for their arrival, enamoured of their charms. They conducted the heroes to Valhalla.

The residence of the gods is Asgard, a fortress of heaven, whence the bridge Bifrost leads to the earth. Asgard contained the palaces of the gods. There was Valaskialf, the silver palace of Odin, with all the above-mentioned divinities. In the centre of Asgard, in the valley of Ida, was the place of meeting, where the gods administered justice. This place was the most highly ornamented of all. Here was Gladheim, the hall of joy; Wingolf, the palace of friendship and love; and Glasor, the forest of golden trees. Valhalla was a separate palace, with groves and beautiful environs: in it was the dwelling of heroes who had fallen in battle. Here life is passed in bloody war and riotous revelry. But all wounds here received in battle are healed as soon as the trumpet sounds for the feast; and then the heroes quaff the oil of Enherium, and the beautiful Valkyrias fill their cups.

The number of heroes is immense, and will increase indefinitely; yet the gods will wish that it were still greater when the wolf Fenris comes. This leads us to throw a glance at the wicked Loke. Loke, the son of the giant Farbaute and of Laufeya, is, if not a god, yet a superhuman being, beautiful of body, but malignant of spirit. By the giantess Angerbode (Messenger of Evil) he had Hela, the goddess of the lower regions, half blue and half flesh colour, and with a terrible figure, the wolf Fenris, and the terrible serpent of Midgard, Jormungandur, which surrounds the whole earth. Hela rules in Niflheim. Her hall is called Elidnir (Grief); her bed Kor (Disease); her table Hungr (Hunger); her servants are Ganglati and Ganghol (Lethargy and Delay). All who died of sickness and old age descended to her dark mansion. Thus Niflheim and Asgard are opposed to each other as existence and non-existence, and the scalds imagined that destruction would finally be victorious over every thing that is: hence their idea of the end of the world. Three terrible winters, and again three more, will succeed each other: snow will rush in from all sides: the cold will be severe, the storms violent, the sun covered, and bloody wars will distract the whole world. This is the sign that the destruction of the world, and the great "twilight of the gods" (thus the end of the world is called) is nigh. The wolf Fenris—a monster which, when it opens its jaws, touches the skies with the upper, and, with the lower, the primeval abyss—devours the world, while the inhabitants of Musspellheim, under the command of Surtur, make an attack upon Asgard. Heaven is stormed by these giants, and heaven's bridge falls when they ride over it. For this reason, Heimdall is placed there as a watch, and the gods look with pleasure upon the numerous combatants of Valhalla. But all precaution is vain: the gods must perish, even the all-powerful Odin and the mighty Thor. A new sun will then illumine the earth, and Lift and Liftrasor—a human pair saved from the destruction, and nourished on morning dew—will renew the human race. There will be new dwellings for the just and unjust, for reward and punishment—Gimle (a splendid residence towards the southern end of heaven) and Nastrand. Widar (the Conqueror) and Wale (the Powerful) will live in the dwellings of the gods, after the flame of Surtur is quenched. Mode (Mental Power) and Magne (Strength) will receive the crushing hammer, after Thor, exhausted by the struggle, has perished, and Widar tears the jaws of the wolf asunder.

These mythuses have been preserved in the Edda and the Sagas (See Müller's *Sagabibliothek des Scandinavischen Alterthums*, Berlin, 1816), by Procopius of Cæsarea, Jornandes, Paulus Diaconus (son of Warnefried) Ermoldus, Nigellus, Adam of Bremen, Saxo Grammaticus. Schlozer, Adelung, Delius, Mallet, Nyerup, Grater, and Rühs, entertain very different, sometimes contradictory, opinions respecting their historical value. (See *Edda.*) The subject cannot, however, be considered as completely examined. Another question has been started, whether this northern mythology was also Germanic. At all events, those Scandinavians are connected by origin with the Germanic tribes, and, as Germanic tribes passed the Rhine, so other tribes pressed in from the North and East, and Goths and Saxons brought this mythology to Germany.—See Nyerup's *Dictionary of Scandinavian Mythology* (Copenhagen, 1816, in German); Kattenfeld's *Dissertations on the Doctrine of the Asas, and its Application* (in the Isis of 1819, in German); Mone's *History of Paganism in Northern Europe* (in German); bishop Münter's *Ecclesiastical History of Denmark and Norway* (the first book of vol. i. treats of the Scandinavian paganism of Odin; Leipsic, 1823, in German); and Vulpius's *Dictionary of the Mythology of the German and the kindred Tribes, and the Northern Nations* in (German); see, also, vol. i. of Geijer's *History of Sweden* (in Swedish and in German, Salzburg, 1826), and *Edda Sæmunder hins Froda* (part iii. Copenhagen, 1828), containing the *Voluspá*, *Kávamál* and *Rigsmál*, with a Dictionary of the Ancient Northern Mythology, by professor Magnussen.

NORTHERN WAR, from 1700 to 1721. The *northern war* (so called), in the north and east of Europe, was contemporary with the Spanish war of succession in the west. The king of Poland, Augustus II., elector of Saxony, the czar Peter of Russia, and the king of Denmark, secretly united against the king of Sweden, Charles XII. (q. v.), 1698, then only sixteen years old, to regain the provinces ceded to Sweden, by the treaties of Copenhagen, 1660, of Oliva (q. v.), 1660, of Kardis, 1661. A Danish army, therefore, invaded the states of the duke of Holstein-Gottorp, the brother-in-law of Charles XII., to enforce Denmark's claim to the sovereignty of Sleswic, and a Saxon army invaded Livonia. But Charles XII., who had gained the naval powers (England and Holland) to assist his cause, by a treaty concluded at the Hague (1700), landed in Zealand, and the allied Swedish, Dutch, and British fleets bombarded Copenhagen. This compelled the king of Denmark, Frederic IV. to separate from the league, at the peace of Traventhal (August 18, 1700), and to acknowledge the sovereignty of the house of Gottorp over Sleswic. Charles now advanced against the Russian army, which besieged Narva, in Esthonia, and completely defeated it, November 30, 1700. Upon this he compelled the Saxons to evacuate Livonia in 1701, and proceeded towards Warsaw, when the party of Sapieha, in Poland, declared themselves against king Augustus. He defeated the Polish-Saxon army at Clissow (July 20, 1702), then the Saxons at Pultusk (May 1, 1703), and effected the dethronement of king Augustus at the diet of Warsaw (February 14, 1704), as also the election of the palatine of Possen, Stanislaus Leczinski (July 12), to the throne of Poland. Lastly, he obliged king Augustus, after the defeat of the Saxon general Schulenburg, at Punitz (November 9, 1704), and at Fraustadt (February 13, 1706), by his march into Saxony, to sign the peace of Altranstadt, (q. v.), September 24, 1706. In the mean time the Russians, commanded by general Scheremeteff, had defeated the Swedish general Schlippenbach, in Livonia (January 11, 1702); they had captured Marienburg, and taken Noteburg, on the Neva (October 22), which the czar then called *Schlüsselburg*. May 27, 1703, Peter laid the foundation of St Petersburg, on the island Lusteiland, in the Neva. In 1704, he took Dorpat and Narva; in 1706 and 1707, he gained such power in Poland, that he began to take measures for the election of a new king; and the confederacy of Sandomir allied itself to him in 1707, although the republic had made a treaty in 1705 with Sweden. But Charles XII. returned to Poland from Saxony with a formidable army of 43,000 men (September 20). He soon made himself master of the principal towns, crossed the Berezina, July 10, 1708, and beat the Russians under Scheremeteff, before Golowtschu, July 14. From Mohilew he proceeded to the Ukraine, September 15, at the invitation of the Cossack hetman Mazeppa. (q. v.) In the mean time his general Lowenhaupt, who was to join him with fresh troops, and supplies of provisions and ammunition, was entirely defeated by Peter at Liesna (October 9). Menschikoff devastated the Ukraine in November, and Charles was obliged to take up winter quarters there, where he lost 4000 men by hunger and cold. Mazeppa succeeded in making a treaty for Charles XII. with the Zaporogian Cossacks (March 28, 1709); but this very event induced the king, instead of restoring his connexion with Poland on the Dnieper, to lay siege to Pultawa (q. v.) (April 4). Here his army, which consisted of 12,000 Swedes and 13,000 Cossacks and Walachians, was entirely routed by the Russian army of 60,000 men, which was under the command of Scheremeteff, Menschikoff, and Bauer, Peter himself acting as a colonel June 27 (July 8), 1709. Charles retreated over the Dnieper; his general Lowenhaupt was taken prisoner, with 16,000 men (July 11), at Perevolotschna. During five years Charles endeavoured to excite the Porte against the czar. (See *Pruth.*) The king of Denmark, on the other hand, renewed his alliance with Augustus II. at Dresden, June 28, 1709. The latter declared (August 8) the peace of Altranstadt invalid, and advanced towards Poland with 13,000 men, where he was again received as king, and renewed his alliance with the czar, at Thorn (October 8), renouncing all the claims of the republic of Poland on Livonia, in favour of Russia. October 22, 1709, the czar also concluded an alliance offensive and defensive with Denmark, at Copenhagen. A Danish army (November 12) invaded Schonen, but was completely defeated by general Steenbock (March 10, 1710) at Helsingborg, and compelled to retreat to the ships. An army composed of the united Saxon, Polish, and Russian forces, however, invaded Swedish Pomerania (August, 1711), and a Danish army conquered (in the period from July to September, 1712) the Swedish duchies Bremen and Verden. The Swedish general Steenbock, indeed, after having beaten the king of Denmark, and the Saxons under the field-marshal Flemming, at Gadebusch, in Mecklenburg, December 20, advanced to Holstein, and Jan. 9, 1713, reduced Altona to ashes; yet he was forced, by the united Russian, Danish, and Saxon forces, in which the czar was present, to withdraw to the Gottorp fortress Tonningen (Feb. 14), where he was compelled by famine to capitulate (May 16), with 11,000 men. The duke of Gottorp now lost his possessions, and the Russians took Stettin, which was put provisionally in the hands of the neutral king of Prussia, Sept. 30, 1713. At the same time, Peter had occupied Riga (1710), Finland, and Aland. Charles arrived at Stralsund Nov. 22, 1714, where he immediately demanded of Prussia the evacuation of Stettin, and declared war when this demand was not complied with. The consequence was, that 20,000 Prussians, under Prince Leopold of Anhalt-Dessau, joined the Danish-Saxon army, which was besieging Stralsund. (The Saxons were commanded by the field-marshal count Arnim, and by count Wackerbarth.) Charles XII., being thus reduced to extremities, sued for peace through the ambassador of Louis XIV., with whom he made a defensive treaty at Versailles, April 3, 1715; but the allies would not consent to his proposals. He escaped in a Swedish vessel in the night of December 21, upon which Stralsund capitulated (Dec. 23, 1715). Wismar, also, the last possession of Sweden in the German territory, submitted to the Danes (April 19, 1716). Denmark had, by the treaty of June 26, 1715, sold the duchies of Bremen and Verden to the elector of Hanover, who now declared war against Sweden. The czar had also allied himself with Great Britain against Sweden (at Greifswald, Oct. 28, 1715), and with Prussia (Oct. 30). But jealousy soon separated the allies. The czar would not consent to Denmark's aggrandizement; England would not favour the increasing power of Russia. The Poles also confederated to effect the expulsion of the Saxon troops from their country. The diet of Warsaw at length resolved that the king should not retain more than 1200 Saxons in Poland for his body-guard, and that he should never, without consulting the diet, declare an offensive war. This obliged Augustus II. to take no further part in the northern war, which was carried on, during 1716, in Schonen and Norway; but the czar did not assist the Danes. Sweden was, however, deprived of her oldest ally, France, which secretly joined Prussia in 1716. Baron Gortz (q. v.) endeavoured, in 1718, to ally Russia to Sweden, by ceding the provinces on the Baltic, so that the Russian forces, combined with those of Sweden, might regain the German provinces, subject Norway, and execute Alberoni's plan of restoring the house of Stuart to the throne of England. But on the death of Charles XII. (Dec. 11, 1718), the queen of Sweden, Ulrica Eleonora, influenced by the party of Horn, defeated the project. She, however, concluded, under the mediation of France, (*a.*) the peace of Stockholm, 1. with the elector of Hanover, Nov. 20, 1719; Hanover retained Bremen and Verden, making a pecuniary compensation to Sweden; 2. with Prussia, Feb. 1, 1720; Prussia, for two millions of dollars (*thaler*), retained possession of Stettin, and Hither Pomerania, as far as the Peene: (*b.*) the peace of Fredericsborg with Denmark, July, 14, 1720; Denmark kept half of the duchy of Sleswic, which the house of Gottorp lost, and ceded all which it had conquered (Wismar, Rugen, Stralsund, &c.); Sweden gave up her immunity from duties in the Sound and the Belts, and paid to Denmark 600,000 dollars (*thaler*): (*c.*) with Poland a secret armistice at Stockholm (Jan. 7, 1720), which was declared a peace in 1729, and sanctioned by the estates on both sides; Augustus II. was acknowledged king of Poland, but paid one million dollars (*thaler*) to Stanislaus Leczinski. The czar, in the mean time, continued the war; a Swedish squadron was defeated by the Russians (August 7, 1720); the coast of West Bothnia, and, in 1721, that of Norrland, was barbarously devastated. (The Russians burned four towns, 509 villages, and 379 farms). Stockholm, however, was protected by a British fleet against the Russians. At last, the mediation of France effected a peace, which was concluded at Nystadt, in Finland, Sept. 10, 1721. Sweden ceded to Russia, Livonia (for which the czar gave two million dollars, *thaler*), Esthonia, Ingria, and Carelia, part of Wiborg, besides all the islands on this coast, particularly Œsel, Dagoe, and Moen. For this the czar restored Finland, and promised not to interfere in the domestic affairs of Sweden. Thus Russia became the first power of the North, and

Sweden lost this rank, which it had retained from 1648 to 1709.

NORTH GEORGIAN ISLANDS. See *North Polar Expeditions.*

NORTHMEN. See *Normans.*

NORTH POLAR EXPEDITIONS. The daring and hardy mariners of England have, within the last 350 years, penetrated into the remote Arctic regions. Cabot, according to his recent biographer, penetrated into Hudson's bay in 1496. Frobisher, in 1577, sailed into one of the many entrances of Hudson's bay. Davis discovered, in 1587, the entrance (Davis's strait) into the great bay between the western coast of Greenland and the eastern coast of North America; Hudson discovered and examined, in 1610, the straits and bay called after him; Baffin examined, in 1616, the eastern parts of the great channel, called from him *Baffin's bay*, in which Davis's strait terminates. On the western side he discovered (74° 30′ N. lat.) an entrance which he called *Lancaster sound*, but was prevented from examining it; Jones, Middleton, in 1742, and others, explored the western, southern, and northern borders of Hudson's bay. It was expected to find a passage here towards the west, and a prize offered by parliament for the discovery of such a passage, led to the voyage of Ellis, in 1746. At a later period (1771), Hearne reached the Northern ocean by land, from the north-western settlement of the Hudson's bay company; and Mackenzie, in 1780, from that of the North-west company. They discovered (69°—71° lat.) the Frozen ocean, and two rivers which emptied into it. Hearne discovered the mouth of the Coppermine river, and Mackenzie that of the river called by his name, and Whale island. Barrington endeavoured to prove, in his Possibility of approaching the North Pole asserted (new edit., with an appendix by colonel Beaufoy, London, 1818), that in certain seasons the Arctic seas were sufficiently free from ice to allow an approach to the poles. The British government, therefore, in 1773, sent captain Phipps, afterwards lord Mulgrave, with two vessels, to Spitzbergen; but in 80° 48′ the ice prevented them from proceeding any farther. Cook was also stopped in his progress by the ice (1778), at Icy cape (lat. 70° 44′), which he reached from Beering's straits. These and other attempts of the British, Dutch, and Russians seem to show sufficiently that a north-east passage from the Atlantic into the Pacific ocean, or a navigable way round the north coast of Asia into Beering's straits, is not practicable.[*]

The *polists*, as they were called, as Barrow (in his *Chronological History of Voyages into the Polar Regions*, London, 1818), and others, were of opinion that the north-west passage, from Baffin's bay along the north coast of America, where the Mackenzie and Coppermine rivers fall into the Frozen ocean, and round Icy cape into Beering's straits, which is shorter than the former, or even the polar passage, the shortest of all, would not be entirely shut up by ice. They asserted that an error had hitherto been committed in sailing always too near the shore, which was surrounded by enormous masses of ice; and that the middle of the Polar sea, which was more than 2000 miles in diameter, and, between Greenland and Spitzbergen, was of an unfathomable depth, and in constant motion, could not be frozen up, and would therefore afford a navigable passage. They argued from the following facts: The Polar sea is open on the northern coasts of Spitzbergen; the Russians wintered in Spitzbergen, under 80° lat., where the deer propagate. Neither of these facts are true of Nova Zembla (75° lat.); from which they conclude that in Spitzbergen the weather must be milder than in Nova Zembla. Moreover, the cold on the eastern coast is more severe than on the western. For about five years (the period of the deviation of the needle towards the west), immense masses of ice had broken away round Greenland; perhaps in consequence of their increasing weight, and of earthquakes, or of several successive mild winters; hence the icebergs, which, from 1815, were so numerous, down to 40° lat. Several whalers had also stated, that the eastern coast of Greenland, hitherto surrounded, had recently become visible again. Finally, the currents, which set from the north through Davis's and Beering's straits towards the south, by which a constant circulation and change of the waters is kept up between the Northern Pacific and the Atlantic oceans; the great quantity of drift wood, which is brought down from the high northern latitudes along the coasts of Iceland and Greenland; and instances of whales, which, as was shown by the harpoons found in them, had been struck off Spitzbergen, being taken to the south of Beering's straits; and of others wounded in the latter region being taken off Greenland and in Davis's straits,—render a passage through Baffin's bay probable.

According to historical accounts, the Polar sea on the eastern coast of Old Greenland, had been unapproachable for four centuries. The Danish colony, established in 983 by Eric the Red, prospered; but the coast itself became so blocked up by ice (from 1406), that the communication between Europe and that colony, probably long since destroyed, had never been restored. Since that period, also, the soil of Iceland, once covered with wood, had lost its former power of vegetation. To this was added that the aurora borealis, the changes of which were said to depend upon the freezing, thawing, and collision of polar ice, first appeared about a century after the settling of the ice along the coast of Greenland, but has been less often seen since the diminution of the polar ice. On these observations was founded the opinion that the polar ice would naturally disappear, as it had accumulated, in the course of time, and also the conjecture that Greenland, the eastern coast of which was known as far as 80° lat., and the western coast hitherto only to 77° 30′, is an island, and that Baffin's bay opens into the Frozen ocean. On the other hand, it was supposed that America is not connected with New Siberia and Northern Asia beyond the Icy cape.

These considerations led the British government, and at a later period the Russian, to undertake polar expeditions, which were destined, not only to attempt the discovery of a north-west passage, but also, in general, to examine the northern coasts of Asia and America, and determine whether there is a large extent of land around the north pole, which is connected towards the west with America, and towards the east with New Siberia, or with the great continent, which Sannikoff declared he had seen north of New Siberia; or whether, as many believe, North America be entirely separated from the polar countries. Parliament offered a premium of £20,000 sterling to the first navigator who should accomplish the north-west passage, and £5000 sterling to the first vessel which should reach the north pole and pass it. In 1819, the prince regent offered prizes of from £5000 to £15,000 to those vessels which should advance to certain points in the Arctic seas. The British government, therefore, fitted out two expeditions in the summer of 1818, to the north pole. Captain Buchan, commanding the Trent and the Dorothy was instructed to attempt a passage between Spitzbergen and Nova Zembla, over the pole, into the Pacific, and captain Ross, commanding the Isabella and the Alexander, to attempt the north-western passage from Davis's straits and Baffin's bay into the Frozen ocean, and thence into the Pacific. The commanders and crew were carefully selected, and provided with every thing necessary. Captain Buchan, however (July 29, 1818), reached only 80° 32′, north of Spitzbergen, where he remained three weeks, frozen in, and arrived on the English coast October 10.

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[*] It is, however, said that the Cossack Simœn Deschneff sailed, in 1648, out of the Frozen sea to Anadyr through a strait (Beering's straits), and the Russian historiographer Mueller assures us that he saw the account in 1736, in the archives of Yakutzk. This voyage, however, is doubtful.

Captain Ross, who was directed particularly to examine the western coast of Baffin's bay, had penetrated (August 9, 1818) only to lat. 75° 55′ in 65° 32′ W. lon. He examined a part of the western coast of Greenland, which he called the *Arctic Highlands*, in the north-east corner of Baffin's bay, between 76° and 77° lat., and 60° to 72° W. lon., 120 miles in extent, and containing many mountains covered with ice. He found there moss, heath, and coarse grass, game and hares, and a large mass of native iron. The only domestic animal of the inhabitants, who resemble Greenlanders, is the dog, which they use to drag their sledges, made of seals' bones. Their language is a dialect of the Esquimaux. They are of a dirty copper colour, five feet high, and besmeared with train-oil and dirt. They eat meat raw or cooked. They appear not to have any idea of a God, but believe in charms. Women who have borne children are treated with much respect. Their dances and songs are accompanied by convulsive distortions. They had not the slightest idea of other parts of the world, or other men. Ross found most of the statements of Baffin correct. His own discoveries, properly speaking, did not begin before 74° 30′ lat. He reached 77° 40′ lat., and the chief geographical result of his voyage was the more accurate determination of the situation of Baffin's bay, which, until then, was believed to extend 10° farther to the east than it actually does. Ross was convinced that there is no passage from Baffin's bay or Davis's straits into the Frozen ocean. Although he sailed up Lancaster sound (74° 30′), he did not continue his progress far enough to discover that it was open, and a space of 200 miles, particularly Cumberland strait (63° lat.), where a current appeared, and Repulse bay in the north-west of Baffin's bay, was not accurately examined, as he did not arrive there till October 1, and was obliged to leave the coast on account of the danger from the ice.—See Ross's *Voyage of Disoovery for the Purpose of exploring Baffin's Bay* (London, 1819, 4to).

The British government, therefore, in 1819, sent out lieutenant Parry, who had accompanied captain Ross, on a second voyage into Baffin's bay. He penetrated, with his vessels, the Hecla and Griper (the latter commanded by lieutenant Liddon), through Lancaster sound into Barrow's strait, in which he examined Prince Regent's inlet, running in a southern direction, and the Polar sea, and wintered in the harbour of an uninhabited island, which he called *Melville island* (74° 45′ lat.). As he had passed (September 10), 110° W. lon. of Greenwich, he was entitled to the first prize offered by parliament. According to his discoveries, the land stretches along the northern side of Lancaster sound and Barrow's strait, to 93° W. lon. Beyond this, towards Melville island, there are merely separate islands; whilst, on the southern side, an unbroken tract of land extends in a western direction, which stretches on the other side of Prince regent's inlet, far to the west, and borders on a plain of ice, which extends to the highlands, visible in a south-westerly direction from Melville island. The land, seen to the north of Barrow's strait and Melville island, appeared to be a group of islands which Parry called the *North Georgian islands*. With eleven companions, he explored Melville island, and reached, on June 6, the northern coast (75° 34′ 47″ lat., and 110° 36′ 52″ lon.). They found no inhabitants, but there were some remains of Esquimaux huts, a musk-ox, and reindeer. August 1, Parry left the winter harbour, where he had remained ten months. He now steered towards the west, discovered, towards the south, the coast of Bank's land, but was obliged, by immense fields of ice, August 16, 1820, in 113° 46′ 33″ lon. (the most western point ever reached in the Polar seas) and 74° 27′ 50″ lat., to return through Davis's straits to Britain, where both vessels entered the harbour of Leith, October 29, 1820.

These discoveries gave some hope of final success, and captain Parry sailed with the Hecla and Fury, May 8, 1821, with provisions for several years. He was instructed to examine the north coast of America. Parry commanded the Hecla; captain Lyon, who had just returned from a journey through the hot deserts of Africa, the Fury. They entered, between 62° and 68° lat., into Hudson's bay, in order to examine the northern inlets. The first, Repulse bay (68° lat.), permitted (August 22) no passage. The chief object, therefore, was not obtained. Parry now sailed to the north, with the intention of penetrating to the west, but was obliged, after having examined 200 miles of coast, half of which, and particularly the east side of Repulse bay, belonged to the continent, to return, on account of the ice; and, October 8, he went into Winter harbour. Here he passed the long winter, as he had previously done on Melville island, occupied with astronomical and scientific observations. The tedium of the delay was somewhat relieved by playing comedies. A magnificent northern light was seen, and a splendid mock moon. Visits were paid by the kind-hearted and mild Esquimaux, who were docile, honest, peaceable, and fond of music. Whilst the thermometer stood at 24°, journeys were made into the interior. The ice was found not to be more than five feet thick, though a severe frost lasted five months. Walls of snow round the vessels, and over the deck, were a protection against the cold. The Esquimaux lived in huts of snow, with windows of ice. The vessels were not freed from the ice before June 30, 1822. They then sailed to the north, discovered on July 13, the Barrow river, with a beautiful cascade, on a picturesque coast, covered with plants; made journeys on land, observations of the disturbances of the needle, first discovered by captain Flinders, and different from the variation (the disturbance is the greatest near the north pole, and is different as observed in or out of the vessel), and examined Fury and Hecla's strait, between Melville peninsula (not to be confounded with Melville island) to the south, and Cockburn island to the north, to the northern point of the peninsula, which was called *North-East cape*. Towards the west no land was seen; but, as fields of ice made it impossible to get from these straits into the Polar sea, they were obliged to rest satisfied with the examination of Amherst island, 69° 45′ lat., 84° lon. Towards the end of September, Parry sailed out of the strait back to Igloolik (69° 20′ lat.), where he wintered among the Esquimaux. August 7, 1823, he again entered this strait in search of the Polar sea; but the opening was closed, and, as Parry was unwilling to attempt the passage with the Fury alone, both ships returned the last of August, got free from ice September 21, and reached the Shetland isles, October 10, 1823. Excepting some important nautical, geographical, and scientific observations, the chief object of the expedition, a complete description of this icy waste was not effected. Walruses, seals, bears, reindeer, wolves, white and black hares, white foxes, ermines, a single squirrel, many kinds of ducks, ptarmigans, snow-birds, single ravens, also a swan's nest, and some stunted Alpine plants, *rumex digynus*, &c., were discovered in these barren regions.—See the *Journal of a Second Voyage for the Discovery of a North-West Passage from the Atlantic to the Pacific*, 1821—1823, *under the orders of Captain Parry* (London, 1824, 4to). Jamieson, Hooker, and Richardson, described, in a separate volume, the objects of natural history collected by the expedition.—See likewise *Journal of a Voyage of Discovery to the Arctic Regions*, 1819 and 1820, by Alexander Fisher, physician to the Hecla (London, 4to, 1824).

Captain Sabine returned to Britain in the Griper, from Spitzbergen, soon after Parry, December, 1823. The object of his voyage had been to make observations on the pendulum. In August, 1823, he advanced as far as 81° lat., in 25° 20′ E. lon. In Spitzbergen he found the bodies of the Russians buried eighty-five years before, in so perfect a state of preservation, that the cheeks had the freshness of life. His experiments with the pendulum confirmed the theory of the flattening of the earth towards the poles. The results of his astronomical observations, made in June, on the island of Hammerfast, on the coast of Norwegian Lapland, were communicated to the royal academy of science.

Captain Scoresby, the celebrated Greenland voyager, who had first, in his voyages in 1817 and 1820, approached the eastern coast of Greenland, became more accurately acquainted with it in 1822, when he explored it to 75° lat.; the field of ice, which had formerly prevented any approach to it, having been very much diminished in extent. But it is still doubtful whether it will be possible to obtain any information concerning the old Norse colonies on this coast. —See Scoresby's *Journal of a Voyage to the Northern Whale Fishery, including Researches and Discoveries on the Eastern Coast of West Greenland.* (Edinburgh, 1823.)

At the same time that captains Parry and Ross were seeking for a north-west passage into the Polar sea, captain Franklin was sent by the British government to penetrate to the northern coast of America by land, along Hudson's bay and Coppermine river. With three companions, among whom was the naturalist, doctor Richardson, he reached (August 30, 1819) the factory of York, on Hudson's bay, and, following the course of the rivers, passed through a barren wilderness of great extent, which was inhabited by, at the most, 120 families of hospitable Crees. From Providence—the most northern post of the fur-traders (62° 17′ 19″ lat.)—Franklin, accompanied by Canadians as interpreters, continued his route through unexplored deserts, but was compelled to winter there for ten months from September, 1820. In the summer of 1821 he reached the Coppermine river, and, in the last of July, sailed along the coasts of the Northern sea. Want of provisions compelled him to return, and he reached, December 17, a post of the Hudson's bay company, on Moose-deer island, in a state of great exhaustion. July 14, 1822, he arrived at the factory of York, after having travelled, altogether, 5550 English miles. His narrative of a Journey to the Shores of the Polar sea (London, 1823, 4to,) contains the results of his expedition.

In May, 1824, the British government fitted out a third polar expedition for the discovery of a north-west passage through Prince Regent's inlet, under Parry and Lyon. The former, with the Hecla and Fury, arrived, July 13, 1824, at Whale island, in Baffin's bay, the limits of ice (71° N. lat.); September 13, proceeded through Barrow's straits to Admiralty bay, and, September 27, arrived at Port Bowen, in Prince Regent's bay, where the ships wintered. Thence Parry sailed southwardly, July 20, 1825. Storms and icebergs drove the ships ashore, and, on the 25th, it became necessary to abandon the shattered Fury. The Hecla was consequently compelled to return, and, with the crew of the Fury on board, arrived in England October 11, 1825.—See the *Journal of a Voyage*, &c. (London, 1828).

Captain Lyon, in the Griper, accompanied by naturalists and astronomers, also sailed for Baffin's bay, whence it was intended that he should proceed by land to the polar regions, to meet captain Parry on these coasts, in the summer of 1825. But, August, 1824, he became entangled among the icebergs, on the coast of Labrador, and, after encountering great dangers, reached Southampton island in September. In lat. 66°, the Griper lost her anchors in a most violent snow storm, and was obliged to return to England. The disturbances of the magnetic needle, observed by captain Lyon, were remarkable. Near Savage islands, the needles fluctuated, and did not agree with one another; further westward, they became still more unsteady, and entirely useless. At length, in Rowe's Welcome, the needles showed, indeed, no variation, but remained in any direction in which they were placed. See *Narrative of an unsuccessful Attempt to reach Repulse Bay, through the Welcome, in H. M. Ship Griper*, &c.

In 1825, captain Franklin undertook a new journey over land, with the intention of sailing westerly from Mackenzie's river along the coast to Beering's straits, while doctor Richardson should examine the country, with a view to complete its natural history, from the mouth of that river to the Coppermine river. At the same time, captain Beechey sailed in H. B. M. ship Blossom, by the way of cape Horn, to discover an easterly passage round the Icy cape, or in Kotzebue sound. In six months, Franklin reached the Northern ocean, near Garry's island (69° 30′ lat.), and returned upon the Mackenzie to his winter quarters at fort Franklin, on Great Bear lake. Both parties left their winter quarters June 21, 1826, and, July 2, separated, in 67° 38′ lat. and 133° 52′ W. lon. Franklin followed down the western arm of the Mackenzie, which runs along the foot of the Rocky mountains. He had thus examined the coasts of the Polar sea—a barren wall of rocks, from 113° to 149° 38′ lon. Floating ice and fogs compelled him to return; but he was fully convinced that a north-west passage was open. The other division, under Richardson and Kendall, explored the coast from the eastern branch of the Mackenzie to the Coppermine river, whose mouth they reached August 8, and returned, after seventy-one days' absence, to fort Franklin, upon the Great Bear lake. They found much drift wood upon the coast. According to these observations, there is an open passage for ships along the northern coast of America, from 108° to 149° W. lon., towards the end of August, and to the east of Mackenzie's river are several convenient harbours. The two divisions of the expedition examined the coast throughout an extent of 36°. Between the extreme point reached by Franklin and Icy cape only 11° of this coast are unknown. Mean time, captain Beechey, in the Blossom, had sailed north from Kotzebue's sound, and had penetrated over 120 miles beyond Icy cape. Here he waited in vain for captain Franklin's arrival in 154° W. lon., and in a latitude where the length of a degree is only about twenty miles; but he was obliged to return October 14. Captain Franklin had approached to within a short distance of the Icy cape, which is in 160° W. lon., when, out of regard to the safety of his men, he was obliged to give up his plan of pressing forward to Kotzebue sound, and returned to the Great Bear lake, which he entered September 21. The point which this expedition reached lies in about 70° 30′ N. lat. Collections in natural history, magnetical experiments, and observations on the effect of the aurora borealis upon the magnetic needle, were the fruits of this expedition, from which captain Franklin returned to London, September, 1827.—See Franklin's *Second Expedition to the Polar Sea* (London, 1828); Richardson's *Fauna Bor Am.* (1829); and Beechey's *Voyage to Beering's Straits* (London, 1831).

The admiralty now sent captain Parry, in the Hecla, to reach the north pole. He took reindeer and ice boats on board at Hammerfast, in Lapland; reached Spitzbergen, May 27, 1827; left the Hecla there in the ice; sailed, June 21, with two boats, through an open sea; left the boats on the 24th, and began (81° 12′ 51″) his journey over the ice to the north pole. But after thirty-five days' journey over the ice, during which it rained almost all the time, he reached only the latitude of 82° 45′ 15″. The ice was everywhere broken. At length he was compelled to return, as the ice was driven to the south. He had travelled over 292 miles in a right line, and 580 with the necessary windings. The southerly course of the ice facilitated his return. After forty-eight days' passage through the ice, Parry reached (August 12) Table island, and, August 21, after sixty-one days' absence, the Hecla. The dip of the magnetic needle had constantly been towards the north, and the western variation diminished. From the eighty-first degree there was no drift ice, nor birds, nor whales, to be seen, and, with 500 fathoms, no bottom could be found. September 29, 1827, captain Parry and captain Franklin entered the admiralty office within the same half hour.—See Parry's *Narrative of an Attempt to reach the North Pole* (London, 1828).

In the spring of 1829, captain Ross, chiefly through the liberal assistance of Felix Booth, Esq., sheriff of London, undertook a private expedition into the Polar seas, with a view to determine the practicability of a new passage which had been confidently said to exist, particularly by Prince Regent's inlet. In consequence of the loss of the foremast of his vessel (the Victory), and other untoward circumstances, he was obliged to refit at Wideford, in Greenland. The accounts of his departure from thence, on the 27th July, 1829, formed the last authentic intelligence received of the expedition, until the commander and crew were picked up, in August, 1833, by captain R. W. Humphreys, of the Isabella, of Hull, captain Ross's old ship. By captain Ross's account, it appears that the first season—that of 1829—was the mildest that had ever been recorded, and the sea was more clear of ice than had been experienced during any of the former voyages. On the 14th of August, he reached the spot where the Fury's stores were; landed without difficulty, and there he found the provisions, &c., but not the wreck, which had totally disappeared. Having supplied all his wants at this depot, he advanced to the southward round cape Carey, from whence the west coast led him in a south-west direction to the latitude of seventy-two degrees north. Here he was, for the first time, seriously impeded by the ice; but after examining an inlet, he proceeded to urge his way to the southward, as near the west shore as the shallowness of the water would permit, and occasionally landed to take possession of the newly-discovered region for the British crown, with the usual ceremony. Owing to the rapidity of the tides and currents, the stubborn quality of the ice, and the rocky character of the coast, the voyage was perilous in the extreme. Having experienced several almost miraculous escapes from shipwreck, they ultimately succeeded in reaching the 70th deg. of latitude, in a direction nearly due south of Fury point, where their course was arrested by an impenetrable barrier of ponderous ice. In a harbour which they found at this extreme point, they wintered. In January, 1830, they opened a communication with a most interesting tribe of natives, who had never before held intercourse with strangers. Friendship being soon established between the adventurous tars and these primitive people, the first winter, which was not more than commonly severe, was spent very pleasantly. Having learned from the natives that the East sea was divided from the West by a neck of land, this point was examined, and all hope of effecting a passage in that direction completely extinguished. Commander Ross (nephew of captain Ross), who was sent to survey the coast of the West sea, leading to cape Turnagain, succeeded in getting within 150 miles of it, and left off within a short distance of where captain Back expected Fish river to join the sea. They also determined that the land was continuous to that which forms Repulse bay. During the autumn of 1830, the voyagers waited in vain for the ice to dissolve, as it had done the preceding year. Although they used their utmost exertions, they had not succeeded in retracing their course more than four miles, when they were arrested, in a very dreary position, by the approach of a winter unparalleled in severity—the lowest temperature being 92° below the freezing point. The summer proving no less rigorous for the season, little hope was entertained of a release, and a farther progress of fourteen miles was all they could accomplish. In October, 1831, the ship was laid up in harbour, where the party endured the rigours of another winter, not less severe than that of the preceding year. Their provisions being consumed, they had now no alternative but to abandon the vessel, and to proceed to the spot where the Fury's provisions still remained—a direct distance of two hundred miles, which was increased by one-half, in consequence of the circuitous route which the ice obliged them to take. They accordingly left the Victory in May, 1832, and after a journey of uncommon labour and hardship, they reached Fury beach in the month of July. During this journey, they had not only to carry their provisions and sick, but also a supply of fuel; without melting snow, they could not procure even a drink of water. They repaired the Fury's boats, and attempted to escape; but it was September before they reached Leopold's island, which they have fully established to be the north-east point of America. Here they waited with inconceivable anxiety for a disruption of the ice, but in vain. It presented one impenetrable mass, extending across Lancaster sound, and intercepting the progress of the fishing ships, which could advance no farther than Admiralty inlet, where some remained so late as the 17th September in the same year. Winter set in, and no choice was left but to retrace their steps, and spend another inclement season in canvass huts, covered with snow. Their sufferings at this time, aggravated by want of beds, clothing, and animal food were of the most acute description. The spring and summer of 1833 afforded the desolate party more cheering hopes. The ice opened on the 14th of August, and on the same day that captain Humphreys, in the Isabella, tried to reach Leopold's island, they arrived there. The former could not cross the ice, and was driven by a north-west gale to the southward, up Prince Regent's inlet. The party remained until the gale had departed; and having crossed when the Isabella was to the southward, they passed to the northward of her, and having gained the south shore of Lancaster sound, they nearly reached its entrance before the Isabella overtook them. It is impossible for any description to do justice to the feelings of either side on meeting. None but those who have been in a similar situation, can form any idea of what passed in the minds of men rescued from such misery by the hand of Divine providence; nor can the feelings of him who has been selected as the instrument of mercy, be fully appreciated. The party were not more reduced by their sufferings than might have been expected. The circumstance that captain Ross was rescued by the ship he commanded in 1818, cannot fail to be considered an extraordinary, as well as a happy conclusion of the voyage, the result of which was, as far as the endeavours of the explorers were directed, of the most conclusive nature, namely, establishing that there is no new passage south of 74° north. The country discovered, which is larger than Great Britain, was named Boothea, after Mr Booth, who acted as a truly patriotic and public spirited citizen, by assisting captain Ross, when fitting out the expedition. The true position of the magnetic pole was discovered, and much valuable information obtained for the improvement of geographical and philosophical knowledge. Captain Ross had a good opportunity of verifying his former survey of the west coast of Baffin's bay, which every master of a Greenland ship can testify is the most correct. Only three men died during the voyage, two of whom were men whose constitutions were unfit for the climate. Captain Ross arrived at Hull on the 18th October, 1833, after an absence of upwards of four years, and his arrival excited a very general expression of satisfaction throughout the kingdom. Before news of his safety reached this country, public subscriptions were raised for fitting out an expedition to go in search of the gallant captain and his crew. Towards this expedition the treasury contributed liberally; and captain Back, whose experience eminently qualified him for the service, was appointed to conduct it. He sailed in the spring of 1833; but news of captain Ross's return reached him in time to prevent him from encountering any inconvenience in his proposed search for that individual. He, however, visited the great Fish river, and examined its course to the Polar seas; and after a perilous Arctic land journey, he arrived at Liverpool, in the packet ship, North America, on the 8th September, 1835.

If the antipolists, or opponents of Barrow, at the head of whom Leslie was, who ascribe the breaking up of the ice on the coast of Greenland to the accidental prevalence of warm winds, and infer, from physical principles, the impossibility of penetrating the ice of the polar seas, are correct in their views, yet these bold expeditions have been rich in scientific results; they have determined the outlines of the northern coast of America, and of the western coast of Greenland, and made known the depth, temperature, saltness, and specific gravity of the polar seas, the rate and direction of the currents, and the state of the atmospheric electricity, and its connexion with the variation and power of the magnetic needle in the Arctic regions. The whole enterprise is a monument of perseverance, hardiness, and courage, as well as of intelligence and skill, highly honourable to the British nation.

The expeditions directed by the Russian government, in part at the expense of the count Rumjanzoff, have had for their object the examination of the coasts of Kamschatka and the north-west coast of North America, or that of the north coast of Asia and Nova Zembla. Captain Kotzebue, on his first expedition (1814—1818), discovered the sound called by his name, to the north of Beering's straits, and, in 1824, undertook a new voyage round the world, in which it was intended that he should penetrate beyond the Icy cape, which had been discovered by Cook; but the ice obliged him to return, and he arrived at Cronstadt in 1826. The Narratives of these two voyages have been published in English.

The polar expedition of baron Wrangel, whose companions were lieutenant Anjou, doctor Kober, and some seamen, started from Siberia in April, 1820. Here, and upon the ice of the Polar ocean, they struggled for four years with cold and hunger, as they could take with them but a small supply of provision in their sledges drawn by dogs. After passing forty-six days upon the surface of the Frozen ocean (at a temperature of from 2° to 22°), they reached, in their sledges, the latitude of 72° 3′. Wrangel surveyed astronomically the whole coast from cape Schalagskoi to Beering's straits, to the point seen by Billings, 438 geographical miles south-east from Cook's North cape, and the hitherto unknown northern coast of Siberia, and placed beyond doubt the existence of an open passage between Asia and America. He returned to Petersburg in May.

A third expedition was fitted out for Beering's straits and the Polar seas, under captain Wassiljeff, who sailed from Cronstadt in June, 1819, with two sloops. Captain Wassiljeff discovered an island inhabited by the Aleutians, in 50° 59′ 57″ N. lat., and 193° 17′ 2″ W. lon. Thence he sailed to 71° 7′ N. lat., 19 minutes farther than Cook had gone before him, and discovered two capes upon the north-west coast of North America, which he named *Golownin* and *Ricord*. The other vessel of this expedition sailed along the eastern coast of Siberia, but was compelled to put back, in 69° 10′, on account of the ice. Late in the summer of 1822, both ships returned to Cronstadt.

To survey the yet unexplored coasts of the island of Nova Zembla, the Russian government sent lieutenant Lasareff in 1819, lieutenant Lawroff in 1821, and the lieutenant-captain Litke in 1822. The last added much to our knowledge of Nova Zembla, and of the coast of Lapland. A new expedition was intrusted to him in 1823, for the examination of Waygatz island; and he was also instructed to make charts of its coasts, as well as the other coasts of these northern regions, of the island Werdhuus, and of Waranger bay. He returned to Archangel August 31, 1823.

Another Russian ship, the Neptune, which, according to Krusenstern, reached (1817) 83° 20′ N. lat., found no indications of a country lying north of Spitzbergen; and this result has been confirmed by Parry's last expedition. The Russians have, however, proved that Asia is not connected with America on the north. See *North America*.

A compendious view of the attempts to explore the polar regions is given in the Narrative of Discovery and Adventure in the Polar sea and Regions, by professors Leslie, Jamieson, and Murray, published at Edinburgh by Oliver and Boyd.

NORTH POLE. See *Pole*.

NORTH POLE in Magnetism. See *Magnetism*.

NORTH RIVER. See *Hudson River*.

NORTH SEA (anciently *Mori-marusa*); a name given to that part of the Atlantic situated to the north of England and Ireland, sometimes also to the *German ocean* or that part of the Atlantic which is north of the Downs and the mouth of the Thames. This term has likewise been applied to the gulf of Mexico, and all that part of the Atlantic which is north of the coast of South America, from the isthmus of Darien.

NORTH STAR. See *Pole Star*.

NORTHUMBERLAND; the northernmost county of England, is bounded on the north by Scotland, and a detached portion of the county of Durham, east by the German ocean, south by Durham and Cumberland, and west by Cumberland and Scotland. It forms an irregular triangle, extending about sixty-five miles from north to south, and about forty-eight from east to west. The county is included in the northern circuit, in the diocese of Durham, and the province of York. Under the Romans, it formed part of the province of Valentia, which extended from Tynemouth to the firth of Forth. During the Saxon period, it was included in the kingdom of Northumbria or North-Humber-Land, which extended northward to the firth of Forth, and southward to the Humber, whence its name; comprehending, besides this county, Yorkshire, Durham, Lancashire, Westmoreland, and Cumberland. From the reign of Stephen till the union of the crowns of England and Scotland, it formed the great theatre of the border wars.

Northumberland, which is one of the largest counties in England, presents a great variety of soil and surface; for though some parts are fertile and well cultivated, the greater portion approaches to the state of absolute barrenness. In the north-west are the Cheviot hills, where the land, though unfit for the plough, affords good pasturage for sheep. Other mountainous districts extend from the south-west angle of the county and the borders of Durham to the moors north of Rothbury. On the eastern side of the county are some fertile tracts, consisting of valleys through which the rivers take their course to the sea; and among these the vale of the Coquet is remarkable for its fertility. Along the sea-coast the surface is generally level, and there are several small bays, or inlets, but no harbour of importance, except that of North Shields at the mouth of the Tyne. The headlands of Bainbrough and Dunstanbrough are two promontories remarkable for their castles; and off the coast are the groups called Farn Staple islands, as well as the larger island of Lindisfarn. Southward of these is Coquet island, at the mouth of the river of the same name. The principal river of Northumberland is the Tyne, formed by two branches; the North Tyne, which rises in the Cheviot hills on the Scottish border; and the South Tyne, which has its source at Aldstone moor in Cumberland; and these uniting near Hexham, flow westward by Newcastle and Shields to the sea at Tynemouth. The Reed, which rises at Carter Fell, among the Cheviot hills not far from the source of North Tyne, falls into that river at Bellingham. The Coquet, which has its origin in the same mountain range, crosses the county from west to east, and enters the sea at Warkworth. The Tweed, a Scottish river, skirts the northern border of this county; and, besides these, may be specified the Blyth, the Wansbeck, and the Alne, which all fall into the German ocean.

The climate of Northumberland is extremely various, but on the whole by no means so cold as might be expected from its northern situation; the temperature of the air being moderated by the sea-breezes which reach it from the Irish channel as well as from the German ocean, and hence the snow seldom lies long except on the tops of the highest hills.

Northumberland is chiefly distinguished for its mineral treasures, especially coal and lead-ore. The great coal-field of this district is partly in this county and partly in that of Durham. The coal-measures and rocky strata, which together constitute the coal formation of Northumberland and Durham, are in part covered by magnesia, limestone, and rest upon lead-mine measures. They occupy a hollow, or basin, the extreme length of which, from Acklington colliery, near the Coquet river, on the north, to Cockfield, near West Auckland in Durham, is fifty-eight miles; and the breadth, from Bywell-on-the-Tyne, westward, to the sea-shore, is twenty-four miles. This tract is characterized by low-topped hills, which rise gradually on advancing from the coast towards the interior. Ores of iron and lead, and calcarious spar, accompany the coal measures; with which also are found organic remains of vegetables, as impressions of ferns, mineralized cones, stalks of trees, &c., and bivalve fresh water shells, but no marine relics. The quantity of coal raised annually in this district is immense. It is exported chiefly from the ports of Shields, Newcastle, and Sunderland, to London and the entire eastern coast of England; the vessels by the Tyne river being the largest, chiefly proceed to London, and those by the Wear, which are smaller, to the towns on the coast. The lead-mine measures form the northern and western boundaries of the coal-field. This formation enters Northumberland from the north side of the Tweed, and in a south-eastern direction it follows the coast from Berwick to the Coquet, for thirty-two miles. The porphyritic mountains of Cheviot interrupt it towards the west for about twenty miles; but, having passed the southern part of that ridge, it stretches across the whole breadth of Northumberland, and is spread over the adjacent borders of Cumberland, Westmoreland, Durham, and Yorkshire. From the lead-ore silver is likewise sometimes extracted in considerable quantities. Ores of zinc and iron are found in many parts of the county; and limestone is of common occurrence.

The principal products of Northumberland, besides minerals, are corn, cattle, sheep, wool, and fish, particularly trout and salmon; the latter, procured in abundance from the fisheries on the Tweed, furnish, when dried or pickled, an important article for exportation. The chief manufactures are such as derive advantage from the collieries, and hence there are extensive glass-works, potteries, and iron founderies.

The six wards in this county are those of Bamborough, Coquetdale, Glendale, Morpeth, Tindale, and Castle Ward. The boroughs are Newcastle, Morpeth, and Berwick; the market-towns are Allerdale, Alnwick, Belford, Bellingham, Blyth, Corbridge, Holtwhistle, Hexham, Rothbury, North Shields, Warkworth, and Wooller; but Blyth, though it is become a place of importance on account of the coal-trade, has not a regularly chartered market; that of Corbridge is discontinued; and the market of Warkworth is inconsiderable. Population of the county in 1831, 222,912.

NORTHUMBERLAND, Duke of. See *Dudley*.

NORTH-WEST COAST OF NORTH AMERICA. This part of the world has been for some time the scene of an active commerce in furs with China. Cook examined this coast on his third voyage. On the arrival of the expedition in China, the sailors disposed of the sea-otter skins which they had obtained, at what seemed to them enormous prices, and it was immediately perceived that this newly discovered branch of trade would be extremely lucrative. Several voyages were accordingly made for carrying on this traffic as early as 1784; and in 1787 two vessels were fitted out from Boston for this destination. In a few years, the trade was almost entirely in the hands of the Americans; and in 1801, out of sixteen ships on the coast, fifteen were American, which collected 18,000 sea-otter skins, besides other furs, for the China market. In 1822, there were fourteen vessels from the United States engaged in this trade, combined with that from the Sandwich islands, in sandalwood. These vessels are from two to four hundred tons burthen, and carry from twenty-five to thirty men; they are about three years in completing a voyage. After exchanging with the natives of the coast for furs, such part of their cargoes as is adapted to the wants or fancy of the people (such as blankets, cloths, coarse cottons, arms and ammunition, cutlery and iron-ware, beads, rice, molasses, rum, &c. &c.), they proceed to the Sandwich islands, where they obtain a cargo of sandal-wood, which, with the furs, they carry to Canton, and dispose of for teas, &c. In 1821, the value of the articles thus sold in Canton was nearly half a million of dollars; and the value in the United States of the articles purchased there, was about a million of dollars. The trade has, however, declined since that period, in consequence of the most valuable article (the sea-otter's skin) having, since the commencement of the present century, become gradually so scarce, that last season not more than 300 were collected on the whole extent of coast where 18,000 were obtained in 1801. In 1821, an attempt was made on the part of Russia to secure the monopoly of this fur-trade, by prohibiting all foreign vessels from approaching within 100 miles of the coasts north of 51° on the American side, below which the fur-trade is worth nothing. By the convention of 1824, between Russia and the United States, this claim was abandoned by the former, and it was agreed that each party might trade on the coasts of the other under certain restrictions. About 1812 a settlement was made by citizens of the United States, near the entrance of the Columbia, or Oregon river, which was taken possession of by the British in 1814, and restored after the peace of 1815. By treaty between the United States and Great Britain, this river and the whole coast are free to both parties; but the British fur company has, in fact, a monopoly of the fur-trade to the westward of the Rocky mountains, except to a small extent on the sea-coast. They have many posts on the several branches of the Columbia, and it has been announced, that they are about forming an establishment on the borders of Observatory inlet, in lat. 56° north. The Russians have given notice of their intention to abandon their principal settlements at Norfolk sound or New Archangel, and remove the settlers to Kodiack.

NORTH-WESTERN PASSAGE. See *North Polar Expeditions.*

NORTH-WEST FUR COMPANY. See *Fur-Trade.*

NORTH-WEST POINT; a cape on the west coast of Africa; lat. 16° 36′ S.

NORTH-WEST TERRITORY, the name bestowed on a tract of country in America, situated between 42° 30′ and 49° N. lat., and 87° 30′ and 95° 30′ W. lon. It is bounded on the north by the British possessions, east by lake Michigan, south by Illinois, and west by the Mississippi, and a line drawn from the source of this river to the northern boundary. It is about 500 miles in length, and 400 in breadth. It is generally a hilly country, with the exception of extensive prairies. At the western extremity of lake Superior are the Cabotian mountains; and near the mineral district are the Smoky mountains. In some of its features this country resembles Missouri territory; but a greater portion of it is covered with wood. The chief rivers, except the Mississippi, are Ouisconsin, Fox, Chippeway, St Croix, Rum, St Francis, and Savanna, flowing into the Mississippi; Grand Portage, Ontonagon, Montreal, Mauvaise, Bois Brulé, St Louis, and nearly fifty smaller streams, flowing into lake Superior. Fox river flows into Green bay; Rivière la Pluie falls into the lake of the Woods None of the lake rivers are more than 150 miles long, and few more than fifty miles. The largest branch of the Mississippi in this territory is the Ouisconsin, which rises in the northern interior of the country, and interlocks with the Montreal of lake Superior. It has a course of between three and four hundred miles, has a shallow and rapid current, but is generally navigable for boats in good stages of the water, and is 800 yards wide at its mouth. There is a portage of only half a mile between this and Fox river, which flows into Green bay of lake Michigan. This portage is over a level prairie, across which, from river to river, there is a water communication for pirogues in high stages of the water. Fox river has a course of 260 miles, and runs through Winnebago lake. It has a fine country on its banks, with a salubrious climate. Chippeway is a considerable river, and enters the Mississippi just below lake Pepin. It is half a mile wide at its mouth, and has communication by a short portage with lake Superior. This is a fine region for hunters. In the upper part of the country, buffaloes, elk, bears, and deer, are common. Beavers, otters, and musk-rats, are taken for their furs. The trappers and savages roam over immense prairies in pursuit of their game. In some parts of it the soil is fertile. White and yellow pine, and canoe birch, are common among the forest trees. All the water-courses, ponds, and marshes, are covered with wild rice, which constitutes a considerable part of the food of the inhabitants. The head waters of the Mississippi are estimated at 1330 feet above the level of the sea. It is a country abounding in minerals. There are great quantities of *terre verte*, or green earth, lead, copper, and iron. The lead-mine district is in the lower part of the country, between Rock river and the Ouisconsin. Here, on a river called *Fever* river, are the chief establishments of the present miners, and the mines are probably as rich and abundant as any in the world. Great quantities of native copper have been supposed to exist on the shores of lake Superior; but recent and intelligent travellers have not confirmed the expectations which had been raised by common report. There are, however, sufficient indications of the existence of mines of copper; and lead and iron are found in many places. The southern parts of this extensive country possess a climate comparatively mild, and resembling that of the northern belt of Missouri. At the falls of St Anthony the summers are temperate, and the winters extremely cold. At St Peter's, in 1820, the mean temperature of Germany was zero—a degree of cold not felt in any part of the United States that is much settled. At the falls of Packagama on the Mississippi, about 1200 feet above the sea, water has been known to freeze considerably on the 19th of July. The inhabitants of the north-west territory are under the jurisdiction of the government of Michigan. The country is divided into four counties, or rather only four counties are set off, named and inhabited by whites; viz. Brown, containing, in 1830, 964 inhabitants; Chippewa, 625; Crawford, 692; Iowa, 1589. The principal towns or villages are Sault de Ste. Marie, on the south bank of St Mary's river, containing 356 inhabitants; and Prairie du Chien, on the Mississippi, three miles above the junction of the Ouisconsin, containing 598 inhabitants. Most of the lands of this region are owned by the Indians, or are claimed by the United States. See Long's *Second Expedition*, and Flint's *Geography.*

NORTON, THOMAS; a dramatic writer of the sixteenth century, a native of Sharpenhoe, Bedfordshire, principally known as the author of the three first acts of Ferrex and Porrex, to which Thomas Sackville, earl of Dorset, added the fourth and fifth, and published the whole under the title of *Gorboduc.* He also put into metre twenty-seven of the Psalms in Sternhold and Hopkin's version. His death took place about 1584.

NORWAY (Swedish *Norrige*, Danish *Norge*, pronounced *Norre*), the proper native country of the Normans (q. v.), a kingdom of the Scandinavian peninsula, is bounded to the west and north by the Northern Atlantic ocean, to the east by Russia and Sweden, to the south by Sweden and the Cattegat. The history of the earliest and the middle ages of Norway consists in legends contained in the *Heimskringla*, which is for Norway what the *Edda* is for Iceland.—See the magnificent edition of the *Heimskringla* (Copenhagen, 3 vols. fol., with a Latin and Danish translation). Little is known of the history of Norway before the end of the tenth century, when the Christian religion was established there by Olaf I. not without violence. Olaf II. continued this forced conversion (1020), and made religion the means of suppressing several petty princes who had a share in the government. Canute the Great, king of Denmark, conquered Norway (1028), but did not long retain possession of it; and the country had its own monarchs again from 1034, who even for a time governed in Denmark. When, with Hakon VII., the male line of Norwegian kings became extinct, the estates elected the young Swedish king, Magnus VIII., Hakon's nephew, to rule over them. His grandson, Olaf IV., was elected to the throne of Denmark in 1376, and on the death of his father in 1380, governed both countries together; and leaving no children at his death, his mother, Margaret (q. v.), daughter of Waldemar III., king of Denmark, inherited both thrones; from which time forward Denmark and Norway remained united; but yet the latter, with some interruptions at a later period, retained its own constitution. This union of both countries continued till 1814. In 1812, some of the allied powers promised Sweden the kingdom of Norway if she would unite with them against France. Norway was to be taken from the Danes, who were allies of France. After the battle of Leipsic (October, 1813), the crown-prince of Sweden with his army proceeded towards Denmark, and, after some bloody scenes in Holstein, peace was concluded at Kiel (14th January, 1814), in which Denmark ceded the kingdom of Norway to Sweden. But the Danish prince Christian, governor of Norway, had been chosen independent sovereign of Norway by the estates of that country, who would not acknowledge the cession which Denmark had made of Norway to Sweden at the peace of Kiel. The crown-prince of Sweden, therefore, entered Norway (July, 1814), and, after several battles of not much importance, the country submitted to the Swedes, not without suspicion of a secret understanding, although the people had solemnly sworn in all the churches, some months previously, to lay down their lives for independence. After this an armistice and a convention were concluded at Moss (August 14, 1814), according to which Norway was to be united to Sweden, but as an independent kingdom, and with a separate constitution. The constitution which had been formed (May 17, 1814) for Norway, by the diet (*Storthing*) assembled at Eidswold, was accepted by the king of Sweden. It is true that disturbances arose in some parts of Norway, but they were without effect; and the *Storthing*, assembled at Christiania, decided upon the union of Norway with Sweden, October 20, 1814. According to the constitution formed November 4, 1814, with a few alterations, Norway remains a free kingdom, independent and undivided. On the Norwegian coins the royal title is altered, so that Norway is named before Sweden. A viceroy or governor is to reside at Christiania, and the nation is to be represented at Stockholm, by a deputation of three Norwegians. Only the crown-prince or his eldest son can be viceroy. A Norwegian or Swede may be appointed governor. The king has the executive power; the *Storthing*, which consists of the delegates of the nation, who deliberate and vote in two chambers, called the *Odelsthing* and *Logthing* (q. v.), the legislative.

Norway has a population of 1,050,132, on a superficial area of 122,960 square miles. The severity of the climate is the cause of the thinness of the population: in the eastern part it is excessively cold; on the coast it is somewhat milder. The air is healthy, and the heat in summer very great, but of short continuance. The country every where contains numerous morasses, forests, and barren tracts. A branch of the Kjœlen mountains, under the name of the *Doffrefield*, divides Norway into northern and southern. The indented coast (from North cape, 71° 10′, to Lindesnes) is lined with islands and islets. Some parts of the country are favourable to pasturage, but sufficient corn is not raised for the wants of the inhabitants, and in the north part of the kingdom a great number of the inhabitants live on dried fish, and bread, made, in part at least, of the bark of the pine (*pinus silvestris*). The chief article of commerce is ship-timber, exported principally to Britain. Other articles of export are iron, copper, pitch, resin, salt, butter, furs, potash, and dried fish, particularly herring. The present condition of Norway is by no means flourishing. The productions of the country are in less demand than formerly, and the commerce has very much declined, particularly the lucrative trade to the Mediterranean. The mines are for the most part neglected, and iron is even imported from Sweden. The revenue in 1826 was 1,900,000 dollars; the expenditure 1,800,000. Measures are taken for the extinction of the public debt, which amounts to 3,500,000 dollars, exclusive of the bank paper. The land force is fixed at 12,000 men; but in peace only 2000 are kept on foot. The navy in 1821 was composed of two frigates, six brigs, and eight schooners. The inhabitants are Norwegians and Finns, and of the Lutheran religion. Their language closely resembles the Danish. The people are ingenious, industrious, frugal, honest, and hospitable, passionately attached to freedom and their native country. The nation is composed of the nobles (the further continuance of nobility was, however, abolished by the *Storthing* in 1821), the clergy, citizens, and peasants. The country is divided into two counties and sixteen villages, or into five bishoprics and four dioceses—Aggerhgus (containing the capital, Christiania), Christiansand, Bergen, and Drontheim (in which the city of Drontheim belongs to the diocese of Drontheim), and Nordland with Finmark (Norwegian Lapland). The Norwegian literature is almost entirely composed of periodical works, and works of local interest. There are, however, some modern poets of Norway; among which are Zettlitz (died 1821), Olsen, and Harsen. The periodical *Saga* is devoted to the old northern languages. See *Sweden*.

NORWICH; a large, populous, and ancient city of England, the metropolis of the county of Norfolk, is situated 108 miles N. E. by N. from London, on the river Wensum, which is navigable up to the town, and over which it has no fewer than nine bridges, three of them of iron. It had formerly an embattled wall, with twelve gates, and flanked by forty towers, some remains of which are yet to be seen. The castle stands in the centre of the town, and was first erected in the sixth century, by the Saxons. The keep, a principal tower. is the only considerable part of the building which now remains. The cathedral is one of the oldest in England, the building having been commenced by Herbert, the first bishop, in 1096; and it was completed by William Middleton, who presided here in 1284. The church originally consisted of a choir, a tower, and transept, with north and south aisles; the nave and its aisles were erected by bishop Eberhard; and the building having been damaged by an accidental fire in 1171, it was repaired, fitted up, and ornamented by bishop John of Oxford about 1197. The chapel of the Virgin Mary was added by Walter de Suffield, the tenth prelate. It is a cruciform edifice, chiefly of Norman architecture, though the later portions display some of the characteristics of the Gothic style. From the centre rises a noble tower, crowned with battlements and angular pinnacles, and surmounted by a lofty spire, the upper part of which having been blown down in 1629, it was rebuilt in 1633. The entire length of the cathedral, from west to east, is 411 feet; from the western door to the entrance of the choir 230 feet; length of the choir 165 feet; thence to the entrance of St Mary's chapel thirty-six feet; length of the transept 191 feet, and breadth seventy-one feet; height of the tower and spire 315 feet. At the east end of the choir are four windows ornamented with stained glass, displaying the transfiguration of Christ, and figures of the prophets, apostles, and evangelists. The choir was formerly surrounded by chantry chapels, of which there are several still remaining. On the southern side of the choir are the cloisters, forming the largest quadrangle of the kind in England, extending 170 feet on each side. They were erected by Robert of Walpole, bishop of Norwich, in 1297; and they have a fine stone roof ornamented with sculpture representing scenes from Scripture history. Northward of the cathedral stands the episcopal palace, built about 1320, by bishop Salmon.

Norwich was early famed for its woollen manufactures, introduced by a colony of Flemings, who settled in the neighbouring town of *Worsted* (a name familiar from the useful article first produced in it), in the reign of Henry I. Other settlers from the same country joined their brethren in the reigns of Henry VI. and of Elizabeth; and numerous articles, framed from mixed silk and woollen, became marketable from Norwich throughout Europe. The staple articles are bombasines, worsted damasks, flowered satins, and fine camlets. To these articles have been recently added the manufacture of cottons, shawls, and other fancy goods, both for furniture and dress. The manufacture of cotton thread lace has also been introduced; and the trade in linen, called Suffolk hempen, is in a flourishing state. In 1810, mills for throwing silk on an extensive scale were erected, and this manufacture employs 1000 persons. The commerce of the city is chiefly transacted at the port of Yarmouth, thirty-two miles distant. Population, in 1811, 37,256; in 1821, 50,288; in 1831, 61,110.

NORWICH; a city of the United States of America, in New London county, Connecticut, on the Thames, at the head of navigation, thirteen miles north from New London; lat. 41° 33′ north; lon. 72° 7′ west; population in 1831, including the township, 5109. The falls of the river at this place afford extensive water power, and there are considerable manufactures.

NOSAIRIANS, NASSARIANS, or ANSARIANS; a Mohammedan sect of the Shiite party, which was formed in the 270th year of the Hegira, and received its name from Nasar, in the environs of Koufa, the birthplace of its founder. At the time of the crusades the Nassarians had spread widely in Syria and Mesopotamia, and rivalled the Ishmaelites in power. They were afterwards confined, by the victories of the Turks, to a strip of mount Lebanon, in Syria, on the Semmack, which they now occupy as tributary to the Turks, though in other respects as an independent nation. Their chief town, Sasita, eight leagues from Tripoli (Tarablus), is an old fortress, with a village of 250 houses, and the residence of their lay scheik, who governs them as hereditary prince and vassal of the Porte. The district of 800 villages, in which the principal part of their population resides, under the governments of Tripoli, Damascus, and Hamah, is not very fertile, but produces grain, garden fruits, figs, mulberry-trees, oranges, and wine, which they allow themselves to drink. They also raise cotton, silk, gall-nuts, madder, and other drugs, in which they carry on a profitable trade. Their manners are rude, and corrupted by remains of heathenish customs, which remind us of the Lingam worship. Although polygamy is not allowed, yet on certain festival days they permit the promiscuous intercourse of the sexes, and are divided, after the manner of the Hindoos, into numerous castes, which oppress one another. The Turks, to whom they make a firm opposition, and the Ishmaelites, their nearest neighbours, detest them, although they differ slightly from the latter in their religious views. They are, like them, worshippers of Ali, believe in the transmigration of souls, but not in a heaven or hell. They are friendly to Christians, and observe Christian festivals and ceremonies, but without understanding their meaning. They, moreover, exhibit, in their worship of God, many traces of the worship of nature of some of the old Asiatic nations. Certain animals and plants are sacred with them, and the secret parts of females, as an emblem of the principle of generation, is an object of their worship. They have many places of pilgrimage and chapels in common with the Turks, in which their worship is exercised with great formality. A spiritual head, Scheik Khalil, directs their religious concerns, and wanders around among them as a prophet. The formerly current opinion, that the Nassarians were Syrian Sabians, or Christians of St John, has been completely exploded by Niebuhr, and the accounts of Rousseau, the French consul at Aleppo.

NOSE (*næse*, *nosa*, Saxon); that prominence on the face, which is the organ of scent and the emunctory of the brain. The ancients seem to have had an aversion to small noses, and the Romans esteemed above all the aquiline nose, which Pliny termed, by way of distinction, *royal*. It is thus that Ælian has described that of Aspasia, and Philostratus those of Achilles and of Paris. According to Plutarch, Cyrus had the same; and on this account the Persians are said to have admired noses of this shape. But aquiline noses were reckoned beautiful only when the curve was gentle and almost insensible, in contradistinction to such as are decidedly crooked, resembling the beak of a parrot. The Grecians, indeed, generally speaking, seem to have held a straight line from the forehead, or rather slightly inclined, to be the *beau idéal* with respect to this feature; and accordingly we find it in their best statues, &c. They, however, participated in the dislike to small and unobtrusive noses; and probably one cause for this is to be found in the fact of their making the expression of indignation and anger lie chiefly in the nose and nostrils. It may be remarked, in confirmation of the above observations, that the short nose is never to be found in Roman sculpture earlier than the times of Caracalla, when the art evidently declined, as is obvious, among other proofs, from the introduction of so bad a taste as working in variegated marbles.

NOSOLOGY (from the Geeek, *νοσος*, disease, and *λογος*), in medicine; that science which treats of the systematic arrangement and classification of diseases.

NOSSA. See *Northern Mythology*.

NOSTRADAMUS; a celebrated empiric of the sixteenth century, born in December, 1503, at St Remy, in Provence. After studying at Avignon and Montpellier, he practised medicine at Agen, Marseilles, Lyons, and Aix. He pretended to foretell future events, and published a volume of obscure metrical rhapsodies in 1555, under the title of Prophetical Centuries. Henry II. and Catharine de' Medici yielded implicit credence to his pretensions, and loaded him with favours; Charles IX. himself came in person to Salon, for the purpose of visiting him, and appointed him his first physician. He died July 2, 1566. There is an English translation of his book in one folio volume.

NOTABLES (*les notables*) signifies, literally, the most important men in a state. In France, where alone this expression was usual, it signified the deputies of the states who were appointed and convoked by the king. In the early history of that country, mention is several times made of the notables; but the first assembly of any importance was in 1558. From 1626 no such assembly was again called, till, in 1786, the minister and controller-general Calonne conceived the idea of summoning the notables for the purpose of effecting several arrangements, which he considered necessary; and there were accordingly assembled, by an *ordonnance* dated December 29, 1786, seven princes of the blood, nine dukes and peers of France, eight field-marshals, twenty-two noblemen, eight counsellers of state, four masters of requests (*maîtres des requêtes*), eleven archbishops, thirty-seven chief justices, twelve deputies of the *pays-d'états*, the civil lieutenant, and twenty-five magistrates of the different cities of the kingdom, making in all 144 persons. After this assembly had continued its sessions from February 22, to May 25, 1787, it separated, and the following results of their labours were published: 1. The provincial assemblies were established according to a plan proposed by the notables; 2. the council of finance was organized as they wished, and was to publish annual reports of the receipts and expenditures, and also of the pardons and pensions; 3. the abolition of the *corvées;* 4. the abolition of the tolls and other obstacles to a free passage through the interior; 5. the abolition of the salt tax, which was to take place by degrees, as the revenue was improved by retrenchments, &c.; 6. freedom of the corn trade, and of the internal trade in general; 7. careful improvement in all departments, and a yearly retrenchment of at least four millions; 8. retrenchment in the household of the queen and princes; 9. a yearly loan of fifty million livres; 10. a yearly tax of fifty millions upon such articles as would render it least burdensome to the people; 11. the provincial assemblies were not to consent to the imposition of any new tax till the retrenchment should amount to forty millions. This assembly forms an epoch in the modern history of France. A second meeting of the notables was called in November, 1788, to consult on the manner of assembling the states-general.

NOTARY (Latin *notarius*, from *nota*, mark) originally denoted, with the Romans, those slaves or freedmen who acted as stenographers (making use of certain abbreviations, signs, *notæ*), particularly in the meetings of the senate. In later times, the *notarii* were the secretaries of public authorities. From the Romans the name passed over to the nations of Western Europe; and in modern times a *notary* is a witness, appointed as such by government, whose testimony is in some cases useful, to give credibility to instruments; in other cases is required by law, to give them full validity, as, for instance, in protests of bills of exchange, &c. In England, the importance of notaries is comparatively small: in Germany, the emperor, while the empire existed, appointed the *notarius publicus sanctæ Cæsareæ majestatis;* and, as the administration of each country belonging to the empire strove to limit, as much as possible, the influence of the emperor, the importance of the imperial notaries was small. When the empire was dissolved, every government, of course, appointed its own notaries, which formerly was a privilege of the emperor or his vicars. In France, the importance of the notary was, and still is, greater than any where else. It was so before the revolution; and he has retained his importance in the new administration of justice. He is not only a public witness for every one who wishes his testimony, but he is also the great witness of government, or the political society. He makes all contracts, mortgages, and other deeds and conveyances, where the property in question amounts to more than 150 francs. The instruments of a notary have full authority, and no testimony against them is permitted. The notary keeps a strict register of all his legal acts, and, for the preservation of the same, is responsible to the public. A party to a contract finds the original of his instrument with him, in case he has lost his copy. The notaries also perform an important part in the division of inheritances, make the inventories, direct the business, and make a report of what has been done. The notaries in the district of a court of the first instance form a body, which chooses a board (*chambre des notaires*), consisting of from one to nine members (in Paris of nineteen), a president, a syndic, a reporter, a secretary, and a treasurer. This board manages the affairs of the body, and adjusts also all disputes of third persons with notaries respecting their official business and fees. See *Dictionnaire du Notariat* (Paris, from 1822 to 1824, 4 vols.).

In England, a *notary public* is a person who publicly attests deeds, or writings, to make them authentic in another country; but he principally acts in business relating to commerce; makes protests of bills of exchange which are not accepted or not paid; attests the statements of masters of ships, in regard to the damage which their vessels have suffered, &c.

NOTATION, in arithmetic, is the method of expressing, by means of certain signs, any proposed number or quantity. In the modern analysis, *notation* implies a method of representing any operation belonging to this science; and the judicious and ingenious selection of proper symbols forms not the least important part of it. The success of a great mathematical operation depends much upon this point, and the science itself has sometimes made a new advance by the invention of new and more manageable symbols. In the common scale of notation, every number is expressed by the ten characters 1, 2, 3, 4, 5, 6, 7, 8, 9, 0, the nine first of which represent different numbers of units, and denote various values, according to the place which they occupy, and according to the following scheme:—

&c.
· Tens of Millions
· Millions
· Hundreds of Thousands
· Tens of Thousands
· Thousands
· Hundreds
· Tens
· Units

so that, beginning at the right, a character standing in the first place signifies units; in the second, tens;

and so on; so that each character signifies ten times more, according as it stands a place farther to the left. If 7 stands in the place of the units, it signifies 7 units; if it stands in the place of the ten-thousands, it signifies 7 times ten thousand. To determine the place of a character, zeros are made to the right of it: thus, to express seventy thousand, we write 70,000, which shows that 7 stands in the fifth place, which is that of the ten-thousands. The system proceeds still farther: if we have to express seventy thousand one hundred and thirty-four, we do not write 70,000, and 100, and 30, and 4, but 70,134. Place the above numbers one under the other, and the reason is obvious:

70000
  100
   30
    4

It appears that it is unnecessary to retain three of the zeros to the right of 70,000, the two zeros to the right of 100, and the zero to the right of 30, because, if we leave them out, thus,

70
 1
  3
   4

and write the remaining figures all in one line, thus, 70,134, each character will have the same place as it had when each number was written out full, and therefore will have its due value. In order to give a number its proper position, a zero is written wherever no number is to be expressed in one of the other places, as in the above case, the zero to the right of 7, without which the 7 would have denoted seven thousands, not seventy thousands. This is the system of notation of whole numbers, and the mode of expressing fractions differs only in this, that they are numbered from left to right.

· Thousands
· Hundreds
· Tens
| · Units |
· Tenths
· Hundredths
· Thousandths
· Ten-Thousandths,
&c.

(See *Decimal Fractions.*) The decimal system, so simple and perfect, is one of the most striking of human inventions, and few things have had a greater influence upon the progress of science and civilization. Little do we dream of the enormous difficulty of calculations with the Roman and Greek notation, and the obstacles which it must have thrown in the way of every art, science, or occupation requiring arithmetical operations. The commerce or the navigation of the present day could hardly have been carried on under such systems, and the general habit of keeping regular accounts, which so greatly facilitates the business of life, and tends so much to preserve the good order and peace of society, could hardly have grown up. The origin of this invention, as of many which have exerted the greatest influence on society, is veiled in obscurity. (For a few historical remarks on the introduction of ciphers, see the article *Ciphers.*) As in our decimal system every possible number is expressed by ten characters, so we can imagine a *dyadic* or *binarian* system, of which two is the fundamental number, and which, to express analogously every possible number, would require but two characters (say 1 and 0), one being represented by 1, two by 10, three by 11, four by 100, five by 101, six by 110, seven by 111, eight by 1000, nine by 1001, and so on. Leibnitz first developed such a system in his *Dyadics.* In the same way we can compose systems of three, four, or any given number of characters; and as 12 is a more convenient number for division and subdivision, we knew a German professor of mathematics, who, having invented for himself two more characters for 11 and 12, and given them names, made a *dodecadic* system, by which he performed the most rapid calculations: 12 was the basis of his system, as 10 is of ours, and each character signified 12 times more than its neighbour to the right, and 12 times less than its neighbour to the left: thus, suppose he used for 10 the character X, and for eleven T, then his series would be thus:

1—1	13—11
2—2	14—12
3—3	15—13
4—4	16—14
5—5	17—15
6—6	18—16
7—7	19—17
8—8	20—18
9—9	21—19
10—X	22—1X
11—T	23—1T
12—10	24—20

so that 100 expresses, in this system, what we should represent by 144. We have dwelt on this point, because it seems to us that the practice of making experiments of this sort would serve to show pupils, more clearly, the nature and character of our system of numeration, the great and sole advantage of which lies in the system, not in the number which serves as its basis. Several tribes have not advanced beyond the rude system of adding successively one to one, and giving a new and arbitrary name to each new number; but for this reason they cannot count far, and, after going beyond a certain number, they generally say *many.* The Romans, though they had the decimal numeral system, nevertheless had not the decimal notation. In their notation, they took five units together, and wrote them thus, V; then they brought two such fives together, from which originated $\overset{\mathrm{V}}{\Lambda}$, or X; five tens they wrote L; one hundred was written C, the initial of *centum;* five hundreds were expressed by the sign D; two five hundreds, or one thousand, by M. (See *M.*) A cipher written to the left of another of higher value, in this system, takes so much from its amount, as, XL is 40, and XC is 90; accordingly 1847 is written MDCCCXLVII. Here no sign has a value according to its position (except, in some degree, X; but it is not the value of X which is changed, but merely its character: it becomes negative by standing to the left of L), and pronouncing such a number is making an addition. It is utterly impossible for us to imagine the difficulty of their calculations, because, if we take a case of simple addition, as,

M
XLVIII
DV
CCIX
XXXVIII
XCII
———

it would be comparatively difficult for us to perform it, although the numbers form themselves in our mind, not according to these signs, but according to our decimal representation, and thus we can perform the operation much easier than they could. They, therefore, were obliged to have recourse to their *abacus* (q. v.). We may add, that 500 was represented by IↃ, as well as by D, and that for every Ↄ added, this number became increased tenfold; 1000 was also expressed by CIↃ, as well as by M; and for every CↃ added, one at each end, the number was increased tenfold. A horizontal line drawn over any figure, increases it a thousand fold.

Notation of the Greeks. These people had three distinct notations, the most simple of which was, the making the letters of their alphabet the representatives of numbers: α, 1; β, 2; γ, 3; and so on. Another method was by means of six capital letters, thus, Ι (ια, for μια), 1; Π (πεντε), 5; Δ (δεκα), 10; Η (ἑκατον), 100; Χ (χιλια), 1000; Μ (μυριας), 10,000; and when the letter Π enclosed any of these, except Ι, it indicated the enclosed letter to be five times its proper value, as stated above; thus

$\overline{|\Delta|}$ represented 50; $\overline{|\mathrm{H}|}$ 500; $\overline{|\mathrm{X}|}$ 5000;

and so on. This notation was only used to represent dates and similar cases: for arithmetical purposes they had a more organized system, in which thirty-six characters were employed; and by these any number, not exceeding 100,000,000, might be expressed, though, in the first instance, it appears that 10,000, or a myriad, was the extent of their arithmetic.

Our digits, . .	1, 2, 3, 4, 5, 6, 7, 8, 9,
they expressed by .	α, β, γ, δ, ε, στ, ζ, η, θ.
For our tens, as, .	10,20,30,40,50,60,70,80,90,
they employed .	ι, κ, λ, μ, ν, ξ, ο, π, ϟ;
for hundreds . .	ρ, σ, τ, υ, φ, χ, ψ, ω, ϡ;
for thousands . .	α̩, β̩, γ̩, δ̩, ε̩, σ̩τ, ζ̩, η̩, θ̩,

that is, they had recourse again to the characters of the simple units, which were distinguished by a small iota or dash placed below them; and, with these characters, a number under 10,000 was readily expressed; and this, as we have observed above, was for some time the limit of their arithmetic. Afterwards 10,000, or a myriad, was represented by M, and any number of myriads by M placed under the number of them. Thus,

$\overset{\alpha}{\mathrm{M}}$. $\overset{\beta}{\mathrm{M}}$. $\overset{\gamma}{\mathrm{M}}$.
represented 10,000 20,000 30,000, &c.

The *Notation of the Hebrews* resembled, in a great measure, that of the Greeks above described, only substituting Hebrew letters for Greek, as far as thousands; and, for representing thousands, they had again recourse to their simple units, distinguishing them only by two dots, or acute accents; thus, א̈, or א̋, expressed 1000; ב̈, 2000; י̈, 10,000; and so on. For the Egyptian system of notation, see *Hieroglyphics*. See also *Symbols*.

NOTCH. See *White Mountains*.

NOTE, Bank. See article *Bank*.

NOTE, Promissory. See *Bill of Exchange*.

NOTES, in music; the signs for tones (*notæ musicæ*). Even in the most remote antiquity, certain letters of the alphabet were used as signs for musical tones. According to some, the Hebrews made use of accents for this purpose, as the modern Greeks still do. The Greeks used different signs for vocal and instrumental music; and, as they had not yet conceived the idea of using the octave to express, by means of a prefixed key, a number of the most diversified tones in a similar manner, they must have required a great number of notes (said to have amounted to 990; half for vocal tones, half for instruments). As they used the alphabetical signs for notes, it became necessary to employ the same letter in different positions, (inclining, inverted, &c.); thus Γ signified, in different positions, seven different tones. Accents also were used, partly by themselves, partly added to letters. If a poem was to be sung, the letters which signified the instrumental tone were placed first; under these the letters for the voice; and under these the words. As the syllables of the Greek language have mostly a natural and distinct quantity (i. e. duration of time), the Greek notes were not required to show the time, and generally could be restricted to height, depth, and nature of tone. In the case of the syllables called common (short and long), there was a liability to mistake, and they were therefore marked with A if long, and with B if short. The fifteen chief tones of the Greek system (extending from our A to $\overline{a}$; see the article *A*) were first reduced to seven by pope Gregory I., towards the end of the sixth century, and marked with the seven first letters of the Roman alphabet; so that the capitals were used for the first voice, the small letters for the higher octave, and the double letters for the highest octave. Parallel lines were soon invented, on which the letters were written. These were used until the happy idea was conceived of substituting for letters points with five lines, the points and rhombuses being placed as well between the lines as on them. This invention is generally ascribed to Guido of Arezzo. According to some, it was known even in the tenth century. The letters which had been formerly used as notes now became clefs. Still the sign for the duration of a note was wanting. The way of marking it was invented, according to some, by a German of Cologne, of the name of Franco, who lived towards the end of the eleventh century. Others ascribe the invention, or, at least, the improvement, to John de Murs (Jean de Moeurs, or Meurs). The *diminutio*, or division of one note into others of less value (for instance, the division of a fourth into two eighths), and the use of running notes, was invented first by Jean Mouton, chapel-master to king Francis I., in the sixteenth century. Since Rousseau, the designating of notes by ciphers has been repeatedly proposed, and adopted with great success in elementary schools; but, in other respects, the old way of writing notes—one of the most ingenious contrivances ever produced, which seems to have given to Leibnitz even the idea of a *pasigraphy* (q. v.) or system of universal writing—has kept its ground. As to printing notes, two periods are distinguished—the first when notes were printed by plates, the second by movable types. The first plates used for this purpose were of wood, and the oldest known are of 1473. Books are known of the time when this way of printing was not yet quite perfected, in which notes were drawn by the pen. Then the printing of notes by copper-plates was invented. The cheaper way of printing from tin plates, in which the notes are punched with steel punches, did not become common till the middle of the last century. As to the second period, the inventor is uncertain. Some consider Ottavio Petrucci, in the beginning of the sixteenth century, as such. James Sanlecque (born at Chaulne, in Picardy, 1573), a celebrated type-founder at Paris, where he died 1648, probably introduced the printing of notes from types into France. Yet the art of printing with them remained very imperfect, until the well-known typographer Breitkopf, at Leipsic, carried the process, in 1755, to such perfection, that he may fairly be called the second inventor. Tauchnitz, of Leipsic, first stereotyped notes. The process of lithography is used at present. Great musicians can sometimes compose with the pen in their hand, and without the aid of the piano. They hear all the music in their soul, as a picture stands, with all its hues and proportions, before the mental eye of an artist, before he touches the canvass. Many persons, however, who play well extempore, are by no means able to compose on paper; and for them a machine would be convenient, which could accompany the player's motions, and write the notes with a rapidity equal to that of his performance. The first idea of such a machine was given in the Philosophical Transactions, in 1747 (No. 483), as the invention of an English clergyman of the name of Creed; yet the practicability of this idea was not sufficiently shown. In 1748, a Mr Unger, burgomaster of Eimbeck, had the same idea without knowing of Creed's communication; and, in 1752, the academy of sciences at Berlin approved of his suggestions; but nothing was done until a member of the academy, Mr Sulzer, induced a mechanic, Hohlfeld, to construct such a machine from an imperfect description of Unger's plan. In the *Nouveaux Mémoires de l'Académie royale des Sciences et des Belles-Lettres à Berlin*, of 1771, is a description of this machine. It consists of two cylinders, from one of which paper rolls off, whilst it is rolled round the other, during which time the keys move corresponding pencils, which write the note on the paper. Not much use, however, has been made of the machine.

NOTKER, surnamed *Labeo;* a learned monk of St Gall, who died about 1022, and left a translation of the Psalms, with notes, in High German, one of the most important monuments of the oldest German prose. The manuscript is at St Gall. The work is printed in Schilter's *Thesaurus*.

NOTRE ANDRE, Le. See *Lenôtre, André*.

NOTRE DAME; the old French expression for the *Virgin Mary*, similar to the English expression *Our Lady*, and the German expression *Unsere liebe Frau;* hence it is the name of many churches, &c., in France, dedicated to the holy Virgin, and particularly of the great cathedral at Paris, whose two high square towers, without spires, are celebrated for their great bells, and also for the splendid prospect to be seen from them. The church itself contains four rows of pillars, fifty-four chapels, an excellent choir, and a great number of celebrated monuments and admirable paintings.

NOTTINGHAM; a large and populous town of England, situated 124 miles N.N.W. from London, at a short distance to the northward of the banks of the Trent. The little river Lene runs close to the town on the south side, and joins the Trent at about one mile distant from it. The situation of the town is extremely beautiful, the streets being ranged like terraces on the acclivity of a hill, which overlooks an extensive tract of country, exhibiting a diversity of romantic and picturesque scenery. At the top of this eminence, westward of the town, stood the modern castle, the front of which consisted of a rustic basement, supporting a Corinthian portico, with a flight of steps on each side leading to the principal entrance. This edifice was the property of the duke of Newcastle, but the apartments were divided, and let for the residence of different families. It was burned to the ground during the tumults occasioned by the debates on the reform bill, in 1831. Several of the streets of this town are wide, airy, and well-paved, considerable modern improvements having taken place here; and within these few years some handsome streets have been built in that part of the town called Standard hill. The staple manufacture of Nottingham is that of stockings, chiefly the finer kinds, as those of silk and cotton. The twist net is also made to a considerable extent, and the number of frames and machines cannot amount to less than 15,000. Several large mills have been erected in the town and its vicinity, for the spinning of cotton and preparing of silk. There are also manufactures of lace for veils, shawls, &c., the working of which gives employment, and is a source of profitable industry, to females. Nottingham has derived great benefit from the extension of inland navigation, having become a depot of goods for the adjacent country. Population, in 1821, 40,415; in 1831, 50,680.

NOTTINGHAM, Earl of; lord chancellor. See *Finch*.

NOTTINGHAM, Earl of; a naval commander. See *Howard, Charles*.

NOTTINGHAMSHIRE; an inland county of England, taking its name from the county town, is bounded, N. by Yorkshire, W. by Derbyshire, E. by Lincolnshire, and S. by Leicestershire. It is about fifty miles in length and twenty-six in breadth. Owing to its situation between the mountainous region of Derbyshire on the west, and the levels of Lincolnshire on the east, this county enjoys so favourable an aspect and climate as to be one of the most pleasant and fertile districts in the kingdom, an evidence of which appears in the unusual number of seats of the nobility and gentry included in it. The atmosphere is remarkable for its dryness, but experience shows that this circumstance does not detract from the fruitfulness of the soil. Almost the whole of the central and western part of the county was anciently occupied by the forest of Sherwood, famed throughout the kingdom as the grand theatre of the romantic exploits of the outlaw Robin Hood, who, according to the historians, Major and Fordun, lived in the reigns of Richard I. and John. This forest is still the property of the crown, but the greater part of the land it contained has been inclosed, and within its original boundaries are flourishing towns, large villages, and noble parks, for the sites of which royal grants have been obtained. The soil of this tract is principally sand and gravel; towards the north, on the borders of the Trent, clay prevails; and in the southern part of the county is the rich and beautiful vale of Belvoir, extending into Leicestershire, including both arable and pasture land in a high state of cultivation.

Nottinghamshire is, through almost its whole extent, watered by that noble river the Trent. The Idle is formed by the union of several streams from the central and north-western parts of the county; and after passing East Retford and Bawtry, it joins the Trent at West Stockwith. The Erwash, which rises in Derbyshire, skirts the western border of this county, and falls into the Trent near Attenborough.

Nottinghamshire is more distinguished for its manufactures than its agriculture. The former consist principally of hosiery, thread-lace, cotton-twist, and silk. The chief towns of the county are Nottingham, Newark, East Retford, Mansfield, Worksop, and Southwell. The population, according to the census of 1831, was 225,400, being an increase of 20 per cent. on the number ascertained in 1821.

NOUN (from the Latin *nomen*, name), in grammar; the name of a thing, or, more accurately, the name of a conception, whether general or particular. As we may have conceptions of substance or of attribute, nouns are either *substantive* or *adjective*. Again, as we have particular conceptions, or conceptions of individuals, and general conceptions, or conceptions of classes of individuals, nouns are either *proper* or *common*. In order to express unity or plurality of conception (number), the terminations of nouns undergo certain modifications of form; in some languages two, in some only one. Thus, in English, the form *man* expresses one individual, the form *men*, two or several; the former is said to be in the *singular*, the latter in the *plural* number; but in some languages, a peculiar modification is used to express the conception of two objects, and this is called the *dual* number. Verbs have also a corresponding modification of form, although they do not convey any idea of one or more objects. (See *Verbs*) To express the relations of conceptions to each other, the English language employs prepositions, or juxtaposition; but many languages make use of an inflection of the primitive form of the noun; this inflection is called *case*. The number of cases is different in different languages, but is rarely more than six. Many relations, even in the inflected languages, are expressed by prepositions, and, in most instances, a peculiar inflection and a preposition are both used. See *Language*, and *Philology*.

NOURISHMENT. See *Aliment*, *Chyme*, and *Dyspepsia*.

NOVACULITE. This stone is commonly known under the names of *hone*, *Turkey oil-stone*, &c. It is of a slaty structure, and owes its power of whetting or sharpening steel instruments to the fine siliceous particles which it contains. Various other stones are used as whetstones, such as common slate, mica slate, freestone, &c.

NOVALIS. See *Hardenberg, Frederic*.

NOVA SCOTIA; a British province of North America, situated between the forty-third and forty-sixth parallels of north latitude, and between the sixty-first and sixty-seventh degrees of west longitude; and bounded on the north by the strait of Northumberland, which separates it from Prince Edward's island; on the north-east by the gut of Canseau, which divides it from cape Breton; on the south-east and south by the Atlantic ocean, and on the west by the bay of Fundy and New Brunswick. It is a peninsula, connected by a narrow isthmus with the continent, and is about three hundred miles long, of unequal breadth, containing about 15,617 square miles. Cape Breton island belongs to this province, and constitutes one of its counties. The civil departments of the province consist of divisions and counties. Of the divisions there are five—the Eastern, Middle, Western, Halifax, and cape Breton. The cape Breton division comprehends the whole island of that name, which forms but one county. Thus there are ten counties, and these are subdivided into districts and townships. The term *division* has reference only to the circuits of the courts and their officers. A *district* is a portion of a county entitled to a court of general sessions of the peace. A *township* has no prescribed size, nor is it endowed with any corporate powers, except that most of them have the privilege of choosing representatives, and of voting money for the support of their poor. The population in 1827, according to the census of that year, was 153,848, of which number 30,000 were in cape Breton. The population has been rapidly increasing for several years, and, at the present time, doubtless, greatly exceeds the above enumeration. The means of subsistence are easy; the price of labour is high; the climate is healthy; and there are supposed to be as many as seven children to each marriage. A majority of the present inhabitants are natives, who are descendants of emigrants from Great Britain and the United States of America. In the eastern parts, there are many Scotchmen. There are no slaves. The face of the country is agreeably diversified with hills and dales; much of it is undulating, but there is no mountain more than 600 feet high. The ridges of land generally run north and south, and sometimes terminate in abrupt cliffs on the sea-shore. The appearance of the sea-coast is generally inhospitable, presenting a bold, rocky shore, and a poor and sterile soil, clothed with a thin and stinted growth of birch and spruce. The features of the northern coast, however, are far more pleasant. The shores are every where indented with harbours, rivers, coves, and bays; and these have a ready communication with the waters of the interior of the country, scarcely any part of which is more than thirty miles distant from navigation.

There is a great inequality in the surface of Nova Scotia; much of the land lies in broken ridges; and the country abounds with small lakes and short rivers. Lake Rossignol, a little to the westward of Liverpool, is said to be thirty miles in circumference. There are many bogs, but they are small. The arable lands of the country, as yet, bear but a small proportion to the wilderness; they are chiefly confined to the borders of rivers and harbours; but there are extensive tracts of excellent land which have not been cleared. About one-sixth of the land is supposed to be incapable of cultivation. The average crop of wheat on new land is said to be from seventeen to twenty bushels to the acre, and of rye from nineteen to twenty-two bushels. In many parts, much larger crops of wheat are raised; but a good crop of rye, Indian corn, barley, buckwheat, or oats, is much more certain to be obtained by proper culture. The soil of Nova Scotia produces potatoes of better quality than are, as yet, obtained in any other part of America. The average crop is two hundred bushels to an acre. Extensive strata of excellent bituminous coal are found in many places. The best that have been discovered are those of Pictou and Cumberland. Great quantities of coal are also found in cape Breton, and it constitutes an important article of export. For several years, the annual export from this island has averaged 8500 chaldrons. Gypsum, also, is abundant, both in the peninsula and in cape Breton.

The largest towns of Nova Scotia are Halifax, Liverpool, Lunenburg, Annapolis, Barrington, Pictou, Argyle, and Windsor. Many others are rapidly growing into importance.

The principal articles of export from Nova Scotia are dry fish, pickled fish, flour, potatoes, and gypsum. The exports of pickled fish, for the year 1828, amounted to 41,682 barrels, with a few tierces and half-barrels. The amount of dry fish for the same year was 174,017 quintals; and the amount of flour 26,721 barrels. Nearly 100,000 tons of gypsum are annually exported to the United States. The vessels built during 1828 amounted to 6147 tons. The exports from cape Breton in 1828 were as follows:—dry fish, 41,000 quintals; pickled fish, 18,000 barrels; coals, 10,000 chaldrons; potatoes, 12,000 bushels; oats, 5,000 bushels; live stock, 700 head; train-oil, 2209 barrels. The registered vessels belonging to the island were 340. Most of them were small, and were employed in the coasting and carrying trade. Small shallops, schooners, and boats, are not registered. Of these about 700 or 800 were employed in the fishing business.

The most numerous religious sect in Nova Scotia is the Presbyterian. Episcopalians, Roman Catholics, Baptists, and Methodists are also numerous. There is a university at Windsor, a grammar-school at Halifax, and academies are established at Pictou and Annapolis. Provision is made by the legislature for assisting the poor in supporting common schools; and the sum of £4000 is annually devoted to this purpose. The number of the militia of Nova Scotia in 1828 was 21,897.

The province of Nova Scotia is immediately dependent on the crown of Great Britain. The king appoints its governor and officers of state, and the colonists elect their representatives. The "captain-general, governor and commander-in-chief" of the British colonies resides in Canada. The governors of the several provinces are styled *lieutenant-governors*. The legislature consists of a council, or upper house, and a house of assembly. The council consists of twelve members, who are named in the governor's instructions, or are appointed by him. The members of the house of assembly are elected for the term of seven years. Nova Scotia was discovered by John Cabot, in 1497, and was probably the first land discovered on the continent of North America. It was first settled by the French, and called *Acadia.* In 1621, it was granted by James I. to Sir W. Alexander, and named *Nova Scotia;* but, in 1632, by the treaty of St Germains, it was restored to France. Subsequently, it several times changed its masters, and was the scene of many troubles and conflicts; and the country was not established in the quiet possession of the British government until the capture of Louisburg, in 1758. At the peace of 1763, the boundaries of this colony were so defined as to include New Brunswick; but a separation was afterwards made, by which the present boundaries were established. See Haliburton's *Historical and Statistical Account of Nova Scotia* (Halifax, 1829.)

NOVA ZEMBLA (*Novaia Zemlia,* i. e. new land); the name of two large islands in the Northern ocean, separated by Matotshnoi straits, and belonging to the Russian government of Archangel; lat. 70° 35′ to 77° N.; lon. 47° 45′ to 77° 20′ E.; square miles 94,400. The Waigatz islands, to the south of Nova Zembla, are separated from the continent by the strait of the same name. The country is uninhabited, but is visited by Russian hunters and fishermen, some of whom pass the winter here. The reindeer, Arctic fox, ermine, and white bear are the principal quadrupeds. Water fowl, whales, seals, and various species of fish abound. Dwarf willows and some shrubs are found; moss and a short grass cover the ground in some places; but a great portion of the country consists of sterile rocks or sands. In the southern part, the sun disappears November 8, and does not rise again till the end of January. The twilight, however, continues about a fortnight, and the dreary horrors of these long nights are somewhat relieved by the northern lights. (See *Aurora Borealis.*) In general, the snow begins to fall in September, and lies till late in June, and in many places all the year round. In 1807, a Russian expedition was sent to examine a part of the coast, where silver was said to have been found; but no traces of it could be discovered. In 1819—22, the government caused the island to be explored.

NOVEL (from the Italian *novella,* a tale, news; though *novella* signifies, in Italian, something quite different from the English *novel,* which is called, in Italian, *romanzo*). The English nomenclature for works of fiction is not very complete. The same word *tale* must be used to designate the Italian *novella* (German *Novelle*) and the Italian *conto* (German *Mährchen*). No department of works of imagination has been so much cultivated as the novel. Their varieties are innumerable; from that form in which a series of historical occurrences is bound together by a very slight web of fiction, to the monstrous products of a distorted imagination. The novel is of a kindred character with the proper epic and the narrative idyl. It begins to be cultivated when the poetical age (*par excellence*) is passed, and man becomes engrossed with reality, and disposed to substitute minute description of the multiplied relations which have sprung up in society, in the room of the creations of his own imagination. Hence slow and accurate development becomes its character, prose its necessary form; and hence the possibility of immense variety. As a work of art, however, it must always form a harmonious whole. In the novel, reflection prevails much more than in other poetical productions, because, the language being prose, and the whole form of the work comparatively unrestrained, allow it, and the advanced period of society to which it belongs requires it. "In the novel," says Goethe, in his *Wilhelm Meister* (third volume), "sentiments and events are to be chiefly represented; in the drama, character and actions. The hero of the novel must be passive, at least, not in a high degree active; we expect of the dramatic hero action. Grandison, Clarissa, Pamela, the Vicar of Wakefield, Tom Jones, are, if not passive, yet retarding persons. In the drama, every thing resists the hero, and he overcomes the hinderances or succumbs." The field of the novel, however, is so great, that it seems to us these limits will not be observed in all cases. The intercourse of the different parts of the civilized world has become so great and rapid, and, consequently, their interest in each other so lively, that a kind of novels has become popular, belonging, like newspapers, to the peculiarities of our time. In fact, they are near akin to newspapers, being merely destined to give a superficial view of the temporary condition of foreign countries, with more connexion and minuteness than is practicable in the daily gazettes. These novels appear, are read, and are forgotten, like newspapers.

As to historical novels,[*] in which this country has so far outstripped every other nation (partly, perhaps, because our history is kept continually before us, from its connexion with the never-ending succession of constitutional questions), we are far from condemning them as an incongruous mixture of fiction and fact. They serve to give some idea of past events to people who would shrink from toilsome research; and, though this sort of knowledge is altogether insufficient for the wants of a sober inquirer into the past condition of men, it furnishes a better occupation for the crowd of readers for entertainment than mere works of fiction. It is the product of a manly nation, and has become popular in an age when people wish for something more substantial than the billing of lovers. The Greeks, who developed with such astonishing rapidity almost every branch of poetry, have left hardly any trace of the novel. If we do not consider Xenophon's picture of the education of a prince, in his *Cyropædia,* as a novel, the first production of this sort in the Greek language is the Milesian Tales, the product of a time when the Greek character was extinct; and to judge from the pastoral piece of Longus, on the loves of Daphnis and Chloe, we can hard conceive of any thing more flat, and full of vulgar sensuality. (See Heyne's *Critique of the Greek Novels,* in his German translation of *Chariton.*) Still fewer traces of this kind of composition are found with the Romans, who stood far behind the Greeks in the fine arts and poetry. The time of chivalry produced many distinguished works of fiction, but they are not what we now expect a novel to be. (See *Troubadours.*) The masterpiece of Miguel Cervantes—*Don Quixote de la Mancha*—which attacks the inflated romances of chivalry with such exquisite irony of description, forms the connecting link between them and the modern novel. See *Romances.*

The modern novel was not developed before the eighteenth century, and to this country is due the honour of having led the way. Samuel Richardson appeared with his Pamela, followed by Clarissa, so universally celebrated. In Grandison he strove to reach the highest perfection, but fell below his former productions. But Richardson had too much a single object in view, and therefore failed to produce a true picture of life. His heroes are personified virtue or vice. Richardson's novels are of the grave kind. Fielding's are humorous representations of familiar life. His Tom Jones, Amelia, and Joseph Andrews, display much knowledge of the human heart, and, as works of art, stand much higher than Richardson's. Smollett's novels are unrivalled for richness of character and fertility of incident. Sterne has shown incomparable humour in his Life and Opinions of Tristram Shandy and his Sentimental Journey, though he has borrowed much from Rabelais. Goldsmith's Vicar of Wakefield is the model of a picture of domestic life. The novel then declined, until, in modern times, it was revived with such splendour by Sir Walter Scott.

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[*] Towards the end of the seventeenth century and the beginning of the eighteenth, it was customary to relate, in the form of a novel, the secret history of German courts, giving to the persons names taken from ancient history. The voluminous works of duke Anthony Ulrich of Brunswick, particularly his Octavia, much diffused the taste for this kind of productions. Of this species is also *Fredegunda,* published from a Franch manuscript, at Berlin, in 1825. Fredegunda is Sophia Dorothea, wife to the electoral prince of Hanover, George Louis; at a later period, George I. of Britain. In the novel Octavia this unfortunate princess is called *Solane.*

The French excel in light, playful tales. Lesage's *Gil Blas de Santillane*, and his *Estevanille Gonzalez*, particularly the first, are highly distinguished. Voltaire's *Candide, Zadig, Micromegas*, &c., are lively sketches, but can hardly be called novels. Marmontel has the merit of a spirited ease and grace; but Arnaud's and Florian's works are little more than books from which we may learn a fluent and easy French. Rousseau, in his *Heloïse*, as in his *Emile*, is, after all, something totally different from a novel writer; he is a philosopher, but his philosophy is not such as recommends itself to the present time. As to the *Héloïse*, much of its merit, we think, lies in the passages which, though written in prose, are, in fact, of a lyrical character. Madame de Genlis, Madame Cottin, and, before all, the great genius Madame de Stael, had contributed to the fame of French literature, the latter shining, in her *Corinne* and *Delphine*, as one of the first class of writers. The historical novel has, of late, also found several successful imitators in France, as well as in Germany, in both which countries, all the novels of Scott, and many others, have been translated. Italy and Spain have produced little in the way of novels, though the tale (*novella*) flourished so early and brilliantly in the former. The first modern attempt at an Italian novel has been made by Manzoni.

No nation, probably, has been more productive in novels than the German; their number is immense, their character peculiar. The separation of the German man of letters from practical life, and the want of a national life, in which characters may develop themselves, are the causes both of the general failure of German novels in depicting men in their various situations, and of a want of manliness, to which we have alluded already in other places. Their descriptions sink not seldom almost to childishness, and, though there is, in the novels of several authors, matter enough for admiration, as, for instance, in Jean Paul, the excellencies are not those which properly belong to a novel. His men are not men. A comparison might be made in some points between Goethe and Scott. If the latter, in some cases, detains the reader too long with an historical introduction, almost amounting to a scientific dissertation, the former detains us, at the beginning of his *Meister*, with a prolix description of puerilities which few readers would wade through, did not the celebrated name of its author warrant a recompense in the sequel. Goethe's novels are, in their kind, some of the best ever written. In the seventeenth century, after the period of romances had gone by, novels appeared in Germany like Ziegler's *Asiatische Banise*, or Lohenstein's *Arminius*; and, in France, those of Mademoiselle Scudéri—portentous productions, in 8—12 vols., prolix, formal, and tedious. A better taste was awakened in the middle of the eighteenth century, by Richardson's novels. After this period followed novels, in which Stark and Lafontaine produced much. Hippel wrote some works of humour. Schlegel, Tieck, Novalis (see *Hardenberg, Frederic*), Wagner, Jean Paul, Goethe followed. Some of their productions, though in general excellent, are infected with a kind of mysticism, which nobody seems to understand but the author, if he. There is one writer who stands almost alone among German novelists—we mean Heinse, whose *Ardinghello* is distinguished for its vigour and voluptuous glow, and, though far from being commendable in a moral point of view, is unsurpassed in its department. Thummel's works show much knowledge of life and character, though the tone is such that it is not every reader who will acknowledge that he has read him. Wieland's novels certainly show the genius of their author, but his Agathon has probably excited much more sensuality than he has conquered. The novels still produced in Germany are very numerous, as the catalogue of the Leipsic book fair annually shows; but whether it were better for most of them "to be or not to be, that is the question."

NOVELS, in law, are those decrees of the Greek emperors which appeared after the official collection, in the *Codex repetitæ Prælectionis*, since the year 534 A. D. Of Justinian 160 are known, of which but 97 have the force of law, because these only were commented upon by the first commentators of the Roman law. The novels of the emperor Leo have no authority.

NOVEMBER (from *novem*, nine); the ninth month of the Roman year, which began in March. See *Calendar* and *Epoch*.

NOVERRE, John George, the reformer of the art of dancing in Europe, was born at Paris in 1727. His father was an adjutant in the army of Charles XII., and he was destined for the military profession; but his taste led him to prefer dancing to fighting, and he became the pupil of the famous dancer Dupré. After attracting the notice of royalty in his own country, he went to Berlin, where he was equally well received. He returned to France in 1746, and composed, for the comic opera, his noted Chinese ballet, which made no extraordinary sensation. He afterwards produced other pieces of the same kind, and acquired so much celebrity, that Garrick invited him to England, where his talents attracted great admiration. Returning to France, he published, in 1760, *Lettres sur la Danse*, in which he started some new ideas, and proposed a radical reformation of his art. He afterwards became master of the revels to the duke of Wurtemberg, with whom he continued some years, and then held a similar office at Vienna. He went to Milan on the marriage of the archduke Ferdinand, and also visited the courts of Naples and Lisbon, where his merit was rewarded with the cross of the order of Christ. After a second journey to London, Noverre entered into the service of Marie Antoinette, queen of France, who appointed him chief ballet-master of the royal academy of music. He suffered greatly at the revolution, and passed the later years of his life in indifferent circumstances. His death took place in November, 1810. He published, in 1807, a new and enlarged edition of his *Lettres sur les Arts imitateurs, et sur la Danse en particulier* (2 vols., 8vo); and at the time of his death he was engaged on a dictionary of the art of dancing, intended to rectify the errors of the *Encyclopédie* on that subject.

NOVGOROD (properly *Nowgorod*, or *Nowgorod-Weliki*); a city of European Russia, capital of a government of the same name, situated on the Wolchow, at its efflux from lake Ilmen; lat. 58° 31′ N.; lon. 31° 16′ E.; population, 10,000. In the earlier periods of the middle ages, Nowgorod was the centre of the commerce of the Hansa (q. v.) and the Normans with Western Asia and the Byzantine empire. In the fifteenth century it contained a population of 400,000; and its magnificence, wealth, and power, gave rise to the proverb, "Who can stand against God and Nowgorod?" It still possesses marks of its ancient grandeur, among which are its sixty-two churches, with their gilt towers, and the ancient fortifications. In the cathedral of St Catharine are the celebrated Chersonese gates, with inscriptions, &c., and the Swedish gates. Novgorod was conquered by the grand-dukes of Russia towards the close of the fifteenth century.

NOVICE, and NOVITIATE. A *novice* is a candidate of either sex for a religious order; and *novitiate* is the time in which the novice makes trial of a monastic life, before taking the final vows. The Catholic church has always prescribed strict rules for the trial of novices, and the council of Trent charges the bishops to watch over the execution of these rules. The novitiate is generally very severe. The novice has to learn the regulations of the order, and, generally, to perform likewise many menial offices about the convent, and to give account of the most trifling actions to the master of the novices. All orders are not equal in their severity. The object of this harsh treatment—viz., that the monastic vows, if taken at all, may be taken voluntarily—is frequently frustrated by families compelling some of their members to embrace the monastic life, however reluctant they may be.

NOVY; Sclavonic for *new*; e. g. *Novygrad* (new town).

NOX; a Roman deity. See *Night.*

NOYAU; a cordial. The word is French, and the term is derived from the use of the kernels of apricots, nectarines, and peaches, in flavouring it. The use of them, in too large quantities, has sometimes made the liquor poisonous, as prussic acid may be extracted from them. The other ingredients in the liquor are French brandy, prunes, celery, bitter almonds, a little essence of orange-peel, and essence of lemon-peel, and rose-water. It is used like the other liqueurs. See *Liqueur.*

NUBIA; an extensive country of Africa, bordering on the Red sea to the east, Nigritia to the west, Abyssinia on the south, and Egypt on the north. It lies between north latitude 13° and 24°, and east longitude 28° and 39°, containing a superficial area of about 360,000 square miles, and divided into a great number of kingdoms, of which the principal are Sennaar and Dongola. It is intersected by the Nile, which here receives the Tacazze, and forms the celebrated peninsula of Meroe. (See *Meroë.*) In the northern part of the country there are extensive deserts, in which roam nomadic tribes, who lie in wait for the caravans. The valley of the Nile contains the largest part of the population, and is fertile. The climate in general is excessively hot, but in the eastern parts is more moderate. Among the animals are elephants, horses, camels, civet-cats, giraffes, lions, tigers, hyænas, hippopotamuses, crocodiles, ostriches. Senna leaves, ebony, sandal-wood, bamboo, gum, corn, tobacco, sugar, rice, tef (a kind of millet used for making bread), &c., are among the vegetable productions. Gold is found in mines, and in the river-sands. The principal article of traffic is slaves, which are imported from the central parts of Africa to the number of about 5000 annually, and exported chiefly to Arabia and Egypt. Dates, gums, and ostrich feathers, are also exported. The population is small in proportion to the extent of the country: it is chiefly composed of tribes of Arabian descent. The Nubians are perfectly black, and have the thick lips, but not the flat nose, nor the prominent jaws, of the negro race. They are well made, and have a pleasing expression of countenance; they are temperate, but not very industrious. They are chiefly Mohammedans. Only the northern part of the country and the coast of Habesh, or New Arabia, is subject to the Turks. The separate kingdoms are governed by independent chiefs, called *malek.* (See *Sennaar.*) Nubia is the northern part of the Ethiopia of the ancients, who placed in it the Nobates, the Blemmyes, the Troglodytes, and other tribes. Mohammed Ali sent an expedition to Nubia under his son, Ismael, in 1821, for the purpose of discovering gold mines, destroying the remnants of the mamelukes, and procuring a supply of negroes. This force penetrated as far as ten degrees north, but was then forced to retreat. Caillaud, who accompanied the expedition, has written an account of the country.—See Burckhardt's *Travels in Nubia;* Gau's *Newly Discovered Monuments of Abyssinia;* Riffaud's *Voyage,* &c. (5 vols., with 300 plates, Paris, 1831).

NUDITY, in the fine arts; the naked state of the human body, to study which is equally important for the sculptor and the painter, because, though the latter comparatively seldom represents the human body entirely without covering, yet the appearance of the covering is determined by the structure of the frame. The reason why sculpture represents the naked figure so much more than painting, is because it can speak to the mind only through the form, while painting has the advantage of colours, which, conveying a lively idea of reality, compel the concealment of much of the body, and, in fact, afford the artist sufficient means of expression without such an exposure.

NUESTRA SENORA, and SENHORA (Spanish and Portuguese for *Our Lady*); the beginning of numerous geographical names; for instance, *Nuestra Senora de los Remedios de Pueblo Nuevo.*

NUEVO (Spanish for *new*) appears in many geographical names.

NUISANCE. Nuisances are either *common,* by which the public in general are incommoded, or *private,* and affecting particular individuals. Of the former class are all obstructions of the public highways, as by putting up a gate across the road; placing a person in the streets of a thronged city to distribute handbills of one's trade, whereby a crowd is collected; keeping a stage coach on the street an unreasonable time for taking in and discharging passengers or freight; occupying a side of the street, for loading and unloading wagons a great part of the day, though it be at the warehouse of the person who employs the wagons, and though there be sufficient room for two wagons to pass each other on the other side of the street; or occupying the street for the purpose of sawing timber, though it is done that the timber may be taken into an adjoining yard. But taking down a building, and putting up, instead of it, a higher one, whereby the street is darkened, is not a common nuisance. Obstructing a navigable river, which is but another highway, is a common nuisance, as by mooring a barge across it, erecting a bridge, or sinking any obstruction in the channel. But where a vessel was sunk in a river by accident, it was held, in one case, that the owner did not, by neglecting to raise and remove it, render himself liable to indictment for a common nuisance, though the navigation was in some degree obstructed. A neglect may be the occasion of a nuisance of this description, as well as a positive act, as where a person neglected to clear the channel of a river on his own grounds, and it was thereby made to flow back. But such a neglect would not, in all cases be a nuisance, either common or private, since it cannot, in general, be presumed to be the duty of all proprietors on the banks of a river to keep the channel free through their lands. Tumults and annoying sounds are another species of common nuisance; and a common scold, by perpetually disturbing the public, becomes liable to indictment and punishment therefor. Poisoning streams is an offence of this description; and so also is the occasioning noisome smells, to the public inconvenience. Common nuisances are punishable at the suit of the public, by indictment. Private nuisances are similar in kind, but are annoyances to only a few, and the persons who suffer may have an action on the case against the person who occasions them. Another remedy, both against common and private nuisances, is the right that every person incommoded by them has to abate or remove them. Thus if one wishes to pass along a street which another has encumbered by some nuisance, he is not obliged to wait to indict the party offending before he can pass, but he has a right to remove it, provided he does so without making any riot or tumult. And so if a person unlawfully builds a dam across a stream, whereby the water is made to flow back upon his neighbour's land, the proprietor of the land overflowed may go upon another person's land, without tumult, force, or riot, and remove the obstruction; but he must be certain that the dam is a nuisance, before he ventures upon such a step. Erecting a smelting-house near to one's land, whereby the grass and herbage are destroyed, has been held to be a nuisance. So is turning water towards one's house, so that it runs into his cellar. So is erecting a bridge, or setting up a ferry, very near to another bridge or ferry, so as to take away tolls. So a sesspool, tallow-furnace, place for keeping swine, lime-kiln, brew-house, tannery, and glass-house, have been held to be nuisances, in particular instances, where they were placed too near dwelling-houses. In one instance, in England, a blacksmith's shop, of which a neighbour complained, as keeping him awake during the night by the hammering, was held to be a private nuisance, though the blacksmith alleged in defence, that he did not work at unseasonable hours. A pigeon-house, or dove-cote, is not a nuisance. In case of complaint by a lawyer against a school kept near to his office, as disturbing him in his studies, the school was held to be no nuisance.

NULLITY, in law; is the entire invalidity of a legal proceeding, or legal instrument. It is distinguished from mere incorrectness, which may be remedied, while this defeats the whole process. The declaration of nullity is most frequent in the French civil and criminal law; and the court of cassation is appropriated exclusively to the trial of cases relating to this point. The corresponding process in England is called a *writ of error*. In Germany, it was provided, in 1654, that the complaint of nullity should be brought only in case of incurable defects, and within thirty years.

NUMANTIA, a town in that part of Spain called by the Romans *Hispania Tarraconensis*, is celebrated for its desperate resistance to the Roman power. The natives of Spain had continued the struggle even after the fall of Carthage, and Viriathus had endeavoured to organize a general insurrection of the Spanish tribes. The plan failed; and, while the greatest part of the Celtiberians returned to submission, the Numantians, who belonged to the Celtiberian tribe Arevaci, determined to hold out. The position of Numantia on a steep height on the Douro (Duero), at the confluence of the Punto. allowed an attack only on one side, which was strengthened by art. The first attempt of the Roman forces under the command of the prætor Pompeius Aulus (A. U. 616), was unsuccessful, and attended with great loss. Yet more disgraceful was the failure of the consul Hostilius Mancinus (617), who was compelled to capitulate on terms which the senate refused to ratify. The commanders who succeeded avoided coming to an engagement with the brave Numantians, who amounted to 8000 men capable of bearing arms. Scipio Africanus the younger, the destroyer of Carthage, was finally sent against them, with a force of 60,000 men. He determined to reduce the place by famine, and, having cut them off from all supplies, compelled the remnant to yield. Many of them, however, killed their wives and children and themselves, or threw themselves into the flames. Thus fell Numantia, which had resisted the arms of Rome for fourteen years, after a siege of fourteen months (621 A. U., 133 B. C.). The town was destroyed by the conqueror. Soria (6000 inhabitants) is supposed to be on the site of the ancient Numantia.

NUMA POMPILIUS, the second king of Rome, reigned from 714 to 672 B. C. (or from the thirty-ninth to the eighty-first year after the building of the city). He was the fourth son of Pompilius Pompo, a distinguished Sabine, and the husband of Tatia, the daughter of the Tatius who, for a long period, shared the kingdom with Romulus. After he had lived with her as a private individual in his native place for thirteen years, he retired, upon her death, to the country, where he led a secluded life, till he was called by the Romans from his retirement to the throne. Numa was not, like Romulus, a warrior, but possessed all the qualities of a lawgiver, and a just and wise ruler. He greatly strengthened the civil institutions of Rome, by uniting them with religious ceremonies. Numa rose far above his contemporaries, by the conception that no mortal can bring himself into communion with God, otherwise than in thought (as Plutarch has related, in his life of Numa). He was the founder of the Roman worship. The establishment of the colleges of pontifices, flamines, and vestals, the improvement of the calendar, the fixing of the *dies fasti* and *nefasti*, the veneration for *termini*, or boundary-stones, intended for the security of property, the founding of corporations, and the abolishing of human sacrifices, are all attributed to him. The temple of Janus was closed for the first time during his reign. Tradition relates that the nymph Egeria, in the grove of Aricia, was the friend and counsellor of Numa. Some have endeavoured to make him the pupil of Pythagoras; but they lived at least two centuries apart. He left an only daughter, Pompilia, who married Numa Martius, and became the mother of Ancus Martius, the fourth king of Rome.

NUMBER. See *Noun*.

NUMBERS. See *Notation*.

NUMERATOR OF A FRACTION; that number which stands above the line, and shows how many parts the fraction consists of, as the *denominator* represents the number of parts into which the unit is supposed to be divided.

NUMISMATOLOGY, or NUMISMATICS, is the name of the science which has for its object the study of coins and medals, principally those struck by the ancient Greeks and Romans. The word is derived from the Greek *νομισμα*, or the Latin *numus*, signifying *coin*, or *medal*. The name of *coins* is given to the pieces of metal on which the public authority has impressed different marks to indicate their weight and value, to make them a convenient medium of exchange. By the word *medals*, when used in reference to modern times, is understood pieces of metal similar to coins, but not intended as means of exchange, but struck and distributed in memory of some important event. The name of *medals*, however, is also given to all the pieces of money which have remained from ancient times. The parts of a coin or medal are the two sides; 1.

the obverse side, face, or head (*pars adversa*, *antica*, *l'avers*), which contains a portrait of the person at whose command, or in whose honour it was struck, or other figures relating to him. This portrait consists either of the head alone, or the bust (*protome*), or of a half or full length figure. 2. The reverse (*pars aversa*, *postica*, *le revers*) contains mythological, allegorical, or other figures. The words around the border form the legend; those in the middle the inscription. (See *Legend.*) Neither of these were originally placed on coins: the latter is frequently merely a monogram. The lower part of the coin, which is separated by a line from the figures, or the inscription, is the basis, or *exergue*, and contains subsidiary matter, as the date, the place where the piece was struck, &c.

Numismatics has the same divisions as history. Ancient numismatics extends to the extinction of the empire of the West; the numismatics of the middle ages commence with Charlemagne; modern numismatics with the revival of learning. The pieces of metal used first as money were rude and shapeless, with some mark to indicate at once their weight and value. Ancient writers even mention money of leather among the Carthaginians, Spartans, and Romans. Money of wood is also mentioned among the Romans; as also of shells, which are still used by some African tribes. But gold, silver, and copper have been and are the ordinary materials of money. The form of money is round, oval, square, triangular, or long, as were at first the *oboli*.

The study of medals is indispensable to archæology, and to a thorough acquaintance with the fine arts. They indicate the names of provinces and cities, determine their position, and present pictures of many celebrated places. They fix the period of events, determine, sometimes, their character, and enable us to trace the series of kings. They enable us to learn the different metallurgical processes, the different alloys, the mode of gilding and plating practised by the ancients, the metals which they used, their weights and measures, their different modes of reckoning, the names and titles of the various magistrates and princes, and also their portraits, the different divinities, with their attributes and titles, the utensils and the ceremonies of their worship, the costume of the priests—in fine, every thing which relates to usages civil, military, and religious. Medals also serve to acquaint us with the history of art. They contain representations of several celebrated works of antiquity, as the Hercules Farnese, the Venus of Gnidos. Like gems and statues, they enable us to trace the epochs of different styles of art, to ascertain its progress among the most civilized nations, and its condition among the rude. Medals are of great assistance to philology, and the explanation of the ancient classics.

The ancient medals were struck or cast. Some were first cast, and then struck. The first coins of Rome, and the other cities of Italy, must have been cast: the hammer could not have produced so bold relief. The copper coins of Egypt were cast. The right of coining money has always been one of the privileges which rulers have confined to themselves. The free cities have inscribed only their names on their coins. The cities subject to kings sometimes obtained permission to strike money in their own name, but most frequently were required to add the name or image of the king to whom they were subject. The medals of the Parthians and Phœnicians offer many examples of this sort. Rome, under the republic, allowed no individual the right to coin money; no magistrate was to put his image thereon, though, sometimes, this honour was allowed by a particular decree of the senate. We can count among the numismatic countries only those into which the Greeks and the Romans carried the use of money. The people in the most northern parts of Europe had no money, nor had those of Asia which extended most to the east, and those of Africa at a distance from the Mediterranean.

Weight should be the standard of the value of money; and many volumes have been written on the value of coins and their weight. The difficulties, however, have not been entirely cleared up, because the same terms (*as*, *dernier*, *sesterce*) have always been employed without regard to difference of time. In the code of Justinian, complaints are made of the indefiniteness of these expressions in donations. The difficulty is increased by the difference of weight in the coins of different cities, and by our ignorance of the value of gold and silver compared with that of bronze at different periods.

The coins preserved from antiquity are much more numerous than those which we possess from the period of the middle ages, in the proportion of a hundred to one. Medals are sometimes dug up singly, or in small numbers, where they appear to have been thrown by accident; but the principal stores are found in tombs, or in places where fear, avarice, or superstition, had deposited them. Millin thinks that the number of extant medals from ancient times may amount to 70,000. Till the third century, the faces on medals were represented in profile. In the coins of the lower empire, on the contrary, we see Gothic front faces filling the whole field of medals. The moderns have employed both modes. The ancients gave more relief to the figure. The art of coining has flourished much in Spain. That country was deprived of the privilege of coining in the time of Caligula. The most ancient Spanish medals are of silver; their form is rude, the style of the design barbarous. The numerous cities which existed in ancient Gaul, before its conquest by the Romans, fabricated money of gold, silver, and copper. The execution of some of them is excellent, but the greatest part are barbarous. No medals are known of Britain, with the exception of some struck by some of the Augustuses, towards the decline of the Roman empire; and the same may be said of Germany. The medals of some of the Italian cities bear the character of Greek art, and are excellent. The medals of these cities are numerous, as the Romans permitted their inhabitants to coin money long after having subjected them. Greece and Asia Minor present many fine and curious medals. The coins of the kings of Macedon are the most ancient of any yet discovered bearing portraits; and Alexander I., who commenced his reign about 500 years B. C., is the earliest monarch whose medals have yet been found. Then succeed the sovereigns who reigned in Sicily, Caria, Cyprus, Heraclea, and Pontus. Afterwards comes the series of kings of Egypt, Syria, the Cimmerian Bosphorus, Thrace, Parthia, Armenia, Damascus, Cappadocia, Paphlagonia, Pergamos, Galatia, Cilicia, Sparta, Pæonia, Epirus, Illyricum, Gaul, and the Alps. This series reaches from the era of Alexander the Great to the Christian era, comprising a period of about 330 years. This must be accounted the third medallic series of ancient monarchs; and the fourth and last descends to the fourth century, including some of the kings of Thrace, of Bosphorus, and Parthia, with those of Comagene, Edessa, or Osrhoene, Mauritania, and Judea. A perfect and distinct series is formed by the Roman emperors, from Julius Cæsar to the Gothic destruction of the empire, and, indeed, still later.

The Grecian medals claim that place in a cabinet, from their antiquity, which their workmanship might ensure to them, independently of that adventitious consideration. It is observed by Pinkerton, that an immense number of the medals of cities, which, from their character, we must judge to be of the highest antiquity, have a surprising strength, beauty, and relief, in their impressions. About the time of Alexander the Great, however, this art appears to have attained its highest perfection. The coins of Alexander and his father exceed all that were ever executed, if we except those of Sicily, Magna Græcia, and the ancient ones of Asia Minor. Sicilian medals are famous for workmanship, even from Gelo's time. The coins of the Syrian kings, successors to Alexander, almost equal his own in beauty. But adequate judges are constrained to confine their high praises of the Greek mint to those coins struck before the subjection of Greece to the Roman empire.

The Roman coins, considered as medals in a cabinet, may be resolved into two great divisions, the consular and imperial. The consular coins seldom or never bore the names or titles of consuls till towards the close of the republic; nevertheless, they are not improperly called *consular*, because they were struck in the consular times of Rome. These have also been denominated "coins of families," and are arranged according to the names inscribed on them. The brass consular coins are rather uninteresting, consisting chiefly of large, unwieldy pieces, with types of insipid similarity. Few of them have any imagery or symbol. Gold was first coined at Rome, sixty-two years after the application of the mint to silver. The general gold coin is the *aureus*. The consular coins, whose number is estimated at 200 in brass, and 2000 in silver, extend not to above 100 in gold, most of which are curious. The name of *imperial* medals is applied specifically to those struck after the conclusion of the republican era of Rome down to the fall of the Roman empire. Caius Julius Cæsar was the first Roman who obtained permission to put his figure upon medals. The triumvirs had each his set of medals. The medals struck after the death and apotheosis of Augustus bear the title *Divus Augustus*. With Constantine commences the series of medals of the emperors of the East or of Constantinople. The series of imperial medals concludes with those of Michael IX. The colonial medals had sometimes Greek, sometimes even Punic, legends; but those with Latin only are far more numerous. Some of these coins are elegant; but they are, for the most part, rude and uninteresting. They begin with Julius and Antony, and occur only in brass. Most of the gold consular coins are of great beauty and high value. The coins of the middle ages embrace the *bracteates*, &c., which, after the dissolution of the Roman empire, were circulated in the newly-formed European states—the second *incunabula* of the forgotten art of coinage.

The materials of which the ancient coins were composed, were, as in modern times, gold, silver, and the various modifications of copper. The laws of Lycurgus also make mention of iron coins being introduced among the Spartans; and the same has been said of Byzantium. But experience has not confirmed this information; and even if it had been the case, it is not likely that coins of a metal so liable to be destroyed by rust, as iron, should have been preserved to modern times. All that remains to us of the ancient coinage, is composed of the three metals above mentioned; and that these were the only materials used, appears highly probable from numerous specimens of the coins of the emperor Augustus, on the reverse of which the *triumviri*, who had the superintendence of the mint, used to denominate themselves: IIIVIR.A.A.A.F.F. that is *Auro Argento Aere Flando Feriundo*. Plate LXI. fig. 1.

According to the testimony of Pliny the Romans first began to coin money in the reign of Servius Tullius. This coinage was entirely of copper or brass, and was estimated by weight. The regulating weight was the pound, (*as, libra*,) which was divided into twelve ounces. The half pound was called *semis*. The mark of a pound on a piece of money was a straight line, like the letter I.; that of a half-pound S, being the initial letter of the word *semis*. The mark of an ounce was a small ball. If the piece contained 1, 2, 3, 4, or 5 ounces, this was designated by as many balls. For a considerable time, the *as*, whether considered as a pound, or as a piece of money, was of equal weight; but afterwards its weight, as money, gradually became much depreciated. The impression on the *as* was, on the one side, the double head of Janus, and on the other a ship. Plate LXI. fig. 2.

The Romans began to coin silver money a few years before the first Punic war. It consisted of the *Denarius*, *Quinarius*, and *Sestertius*. The *Denarius* was so called, because it contained *denos asses*, or ten pounds of brass; in like manner, the *Quinarius*, or half of the *Denarius*, contained the value of five pounds; and the *Sestertius*, or half of the *Quinarius*, two pounds and a half of brass. The mark of the *Denarius* was X., that of the *Quinarius* V., and that of the *Sestertius* IIS. Plate LXI. figs. 4, 5, 6. In the older times, all the three coins had the same impressions, viz., on the obverse, the winged head of Pallas, and on the reverse, the mounted *Dioscuri*, or Castor and Pollux. But, at a later period, the subjects were chosen in an arbitrary manner, as we shall have occasion to show, when we come to treat of the coins of the Roman families. On the *Quinarii* there was generally impressed a goddess of victory, on which account they were frequently called *Victoriati*.

Brut. Imp. L. Plaet. Cest. *Head of M. Brutus*.) (Eid. Mar. *The cap of liberty between two daggers.* Plate LXI. fig. 7.

L. Plautius. *A female mask with serpent hair*.) (Plancus. *The winged Aurora conducting the four horses of the sun*. Plate LXI. fig. 3. The musicians who were employed at Rome during the public festivals, having been offended by the censor Ap. Claudius, withdrew from Rome to Tibur. As the Romans, however, were unwilling to dispense with them, the second censor, Plautius, brought them back by a singular stratagem. He repaired to Tibur, made acquaintance with them, invited them to a feast, and plied them so long and so hard with drink, that they at last lost all recollection. He then put a mask upon each of them, placed them altogether in a carriage, carried them to Rome, and left them in the open street. When they were discovered in this situation in the morning, the merriment was universal, the quarrel was made up; and to commemorate this ridiculous scene, an anniversary festival was instituted in honour of Minerva. This coin, struck by L. Plautius Plancus, a descendant of the witty censor, alludes to the above incident. On one side of the coin is a mask; and on the other the figure of Aurora, to denote the time at which the above *dénouement* took place.

After Julius Cæsar had attained the supreme power, the senate allowed him to place his own portrait on coins—a privilege which had never before been enjoyed by any other individual in his lifetime. He appears with a lank countenance, and a bald head; on which last account he was permitted to cover his forehead with a wreath of laurel. Plate LXI. fig. 12.

Mag. Pius. Imp. Iter. *The head of Pompey the Great*.) (Præf. Clas. et. Orae. Marit. Ex. S. C. *Neptune standing with one foot upon a ship; on each side the pious brothers carry off their parents.* Plate

LXI. fig. 9. After the death of Pompey the Great, his sons Cneius and Sextus continued the war on the part of the republic, but were vanquished by Cæsar at Munda. Sextus alone escaped, and concealed himself till the death of Cæsar, when he again came forward, fitted out a fleet, and so annoyed Mark Anthony and Octavian, that they were at length compelled to admit him into their alliance, and to give up to him Sicily, with the title *Præfectus classis et oræ maritimæ ex S. C.*

Pietas. Cos. *The figure of a woman, with a rudder in one hand, a cornucopia in the other, and a stork at her feet.* Plate LXI. fig. 23. The inscription on the reverse relates to Lucius, the brother of Mark Anthony. The word Pietas was adopted by Lucius Antonius to denote his affection for his brother Marcus. The stork was the symbol of piety, or natural affection.

M. Antonius. Imperator Consul Designatus Iterum et Tertium. *The head of Anthony, with a crown of ivy: a wreath of ivy also goes round the edge of the coin.* On the silver pieces, called *Cistophori.* Plate LXI. fig. 11. The ivy garland properly belongs to Bacchus; but as Anthony wished to be taken for Bacchus, it was placed round his coins out of flattery.

Antoni. Armenia. Devicta. *The head of Anthony, with an Armenian crown behind it.*) (Cleopatræ. Reginæ. Regum. Filiorum. Regum. *Head of Cleopatra, with the prow of a ship.* Plate LXI. fig. 18. This alludes to the stratagem by which Anthony deprived Artavasdes, king of Armenia, of his crown, and placed his own son, by Cleopatra, on the throne.

Octavianus Augustus. The names inscribed upon his earliest coins were generally, Cæsar. IIIVIR. R.P.C. Somewhat later, Imp. Cæsar. Divi. Filius.

Ægypto. Capta. *A crocodile.* Plate LXI. fig. 10. This coin commemorates his conquest of Egypt; a crocodile having anciently been the symbol of that country.

M. Agrippa. L. F. Cos. III. *Head of Agrippa, adorned with a wreath of ships' prows.*) (s. c. *Neptune, holding a dolphin in his right hand, and the trident in his left.* Plate LXI. fig. 21. This coin alludes to Agrippa's naval victories. After the victory over S. Pompeius, Octavius presented him with a crown of ships' prows, called in Latin, *navalis, classica,* or *rostrata.*

Germanicus. Cæsar. *Germanicus on a triumphal car.*) (Signis. Receptis. Devictis. Germanis. S. C. *Germanicus holding in his left hand a staff with an eagle at the point of it.* Plate LXI. fig. 13. The obverse represents the triumph of Germanicus over the conquered Germans. The figure and inscription on the reverse allude to the recovery by Germanicus of the Roman eagles which had been lost in the unfortunate defeat of Quinctilius Varus by the Germans under Arminius.

Agrippina. Drusilla. Julia. S. C. *Three females, each holding in her hand a cornucopia.* Plate LXI. fig. 14. On this coin are represented the three sisters of Caligula, with their names inscribed.

Ti. Claud. Cæsar. Aug. Germ. &c. Imperatore Recepto. *Inscribed over the gate of the camp of the guards.* Plate LXI. fig. 20.

Servius Sulpicius Galba. Imp. Cæsar. Aug. or such like. Hispania: *A female figure, holding in her right hand a bunch of corn-ears and a poppy, and in her left a round shield with two lances.* Plate LXI. fig. 19. Galba was partial to Spain and the Gallic provinces, because they were the first to declare for him against Nero. The attributes of Spain are the bunch of corn-ears, to denote its fertility; and the round shield and lances the peculiar arms of the country.

Imp. Otho. Cæsar. Aug. &c. On Roman coins his head is never surrounded with the laurel wreath, but covered with a sort of curly wig. Plate LXI. fig. 15. No reason has been assigned for the uncommon rarity of the brass coin of this emperor. There are, indeed, a good many of this metal, which, however, were not struck at Rome, but at Antioch in Syria, or at Alexandria in Egypt. All the brass Othos, which have the form of the Roman coinage, are forgeries. There are a good many of gold and silver, bearing his name and portrait, which were struck at Rome. Even the genuine coins of this emperor have nothing remarkable about them, excepting those which bear the inscription—Victoria Othonis.

Imp. Nerva. Cæs. Aug. P. M. &c. Fisci. Judaici. Calumnia. Sublata. S. C. *A palm-tree.* Plate LXI. fig. 25. The Jews were liable to a tax of two drachmas for the maintenance of the temple at Jerusalem. After the conquest of Judea by the Romans, the produce of this tax was employed for the support of the temple of Jupiter Capitolinus. Under Domitian, this tax was levied by the officers in a very oppressive manner; but by an ordinance of Nerva these abuses were rectified; and hence the inscription on this coin.

Dacicus. Dacia. Capta. *A Dacian prisoner, with his hands bound behind his back, sitting upon three shields; behind him, two Dacian crooked sabres; before him, two darts.* Plate LXI. fig. 16. This alludes to the conquest of Dacia, which was made a Roman province. Hence Trajan took the title of *Dacicus.* Upon other coins of Trajan we read Dacia. Augusti. Provincia.

Hadrianus. Augustus. He was the first of the emperors who allowed his beard to grow, because, it is said, he wished to be taken for a philosopher. The custom was continued by his successors, until Constantine the Great laid it aside. Aegyptos. *A female seated on the ground, holding in her right hand the* sistrum, *and leaning with her left on a basket full of fruit: At her feet is the bird* Ibis. Plate LXI. fig. 17.

Concordiæ. Augustor. Tr. P. XV. Cos. III. *The two emperors, Aurelius and Verus, present their hands to each other.* Plate LXI. fig. 22.

ΑΡΕΘΟΣΑ. *A beautiful female head with the hair sticking out on all sides.*) (ΣΥΡΑΚΟΣΙΩΝ. *A youth, in a chariot and four in full career, crowned by a winged goddess of victory.* Plate LXI. fig. 24. This coin was struck at Syracuse, which is still the Peru of the collectors of coins. No Greek city presents us with so many gold and silver pieces, and of such weight. Its coins, too, excel all antiquity in the taste and beauty of their workmanship. The obverse of this coin represents the celebrated fountain of Arethusa, situated near the town and the sea; a divinity in the eyes of the Syracusans, and a favourite theme with many an inspired poet. The figure on the reverse, which always appears upon the Sicilian coins, contains an allegorical representation of their victories. The inscription, it will be observed, is in the Doric dialect.

Plate LXII. we have devoted to English coins. The reader is referred to the article *Coinage,* in this Encyclopedia, for a somewhat detailed account of English coinage. Meanwhile we proceed to describe the coins represented in the above plate.

Plate LXII. fig. 1. A gold coin of Cunobelinus; obverse, the legend CAMV. for *Camulodunum,* Colchester; reverse two horses and a wheel; the legend CVNOBILI.

Fig. 2. A coin of Alfred, bearing on the obverse a bust of the king, ornamented with a plain double fillet, and jewel in front; legend ELFRED REX; reverse, the name of the moneyer TILEVINE MONETA and LONDINIA, in a monogram.

Fig. 3. A coin of Egbert, bearing on the obverse a rude bust of the monarch; legend ECGBEARHT REX; reverse, the legend OBA MONETA, the cross, and a monogram, supposed to be Dorob. C.

Fig. 4. A coin of Edward I., bearing the bust of the king, with a plain double fillet, and legend EDWARD REX; reverse, the representation of a church, as is supposed, legend VVLFSIGE.

Fig. 5. A coin of Ethelred, bearing on the obverse the bust, adorned with a single fillet, having the ends pendent, and terminated with pearls, legend ÆTHELRED REX ANGLORUM; reverse, in the centre, *a* and *w*, with the hand of Providence, legend VALTFERTH. MOGIP. i. e. Ipswich.

Fig. 6. A coin of Canute, bearing on the obverse a bust of the king, with a kind of bonnet or helmet, surrounded by a fillet; both that and the bonnet have the ends pendent and ornamented with pearls; also a sceptre, surmounted with a *fleur de lis*, legend CNUT. REX. Reverse, MOKULFON. STAM. i. e. Stamford.

Fig. 7. An Irish halfpenny of king John; obverse, full face, in a triangle, which is supposed to represent the Irish harp, legend JOHANNES REX. Reverse, in a triangle, a crescent, and blazing star, with a small star in each angle of the triangle, legend WILLEM ON DI., i. e. Dublin.

Fig. 8. A penny of William, which is ascribed to the Conqueror, from the circumstance of the double sceptre, to which his son Rufus had no pretension; the sceptre in his right hand is surmounted with a cross paté, or holy cross; that in his left is surmounted with three pellets or pearls crosswise at the point, legend WILLEM REX ANGLOR., the Saxon 𝔚 (W), being invariably used on these coins. Reverse, a cross, with four sceptres, *bottonné* or *pommetté* in the quarters, in form of an escarbuncle.

Fig. 9. A shilling of Henry VII. Obverse, profile of the king to the left, with a crown of one arch only; mint mark a *fleur de lis* on both sides; legend HENRIC. SEPTIM. DI. GRA. REX. ANGL. Z. FR. Reverse, the arms of France and England quarterly, in a plain shield, surmounted by a cross fourché. In the smaller coins is a key on each of the lower quarters of the cross below the base of the shield; legend POSUI DEU. ADIUTOREM MEU. The coins of this reign were distinguished from those of preceding reigns by several particulars: the arms of England and France took place of the pellets; numerals, as VII., were first used on some coins, to distinguish the kings of the same name, besides the exchange of the side face for the full face: a practice which has continued ever since, with this difference only, that the heads are sometimes turned to the right, and sometimes to the left.

Fig. 10. A crown of Henry VIII., which is supposed to have been struck upon Henry's assuming the supremacy, and to have served more as a medal than a coin. Obverse, face nearly full, bust to the waist, crown of *fleurs de lis*, and plain crosses; in the right hand a sword, resting upon his shoulder, and in his left the orb, with the cross, denoting thereby that he was ready to defend his dominion and faith by the sword; legend HENRIC. 8. DEI. GRATIA. ANGLIE. FRANCI. Z. HIBERN. REX. Reverse, the royal arms crowned and supported by a lion and a dragon; legend ANGLICE Z HIBERNICE ECCLESIE SUPREMUM CAPUT, and beneath the shield, H. R.

Fig. 11. A shilling of fine money of Edward VI. Obverse, a bust of the king full-faced, crowned, and in parliament-robes, with a chain of the order of the garter; on one side of the face a double rose, and on the other XII. to denote the value; mint mark a ton on each side; legend EDWARD VI. D. G. AGL. FRA. Z. HIB. REX. Reverse, arms in a plain shield, surmounted by a cross fourche. This is supposed to be the first and only English coin or medal, whereon the collar of the order of the garter is to be seen; but, whether from the mistake of the engraver, or any other cause, this is different from the collar of the order appointed by the statutes of Henry VIII., which was to be composed of double roses encompassed with the garter; whereas this has single roses of four leaves only, without garters, and without knots between. The silver coins of this reign were the last on which the heads of any of our princes have been represented with a full face.

Fig. 12. A half-crown of queen Elizabeth. Obverse, bust of the queen, having the hair curled in two rows next the face, and turned up behind, ruff, and gown richly ornamented: sceptre fleuré in the right hand, globe or mound in the left; mint mark on both sides the Arabic figure 1; legend ELIZABETH D. G. ANG. FRA. ET HIBER. REGINA.

Fig. 13. A half-crown of James I. Obverse, the king on horseback, in profile to the left, crowned, and in armour. In his right hand a drawn sword; the horse ambling; on the housing a rose crowned; mint mark on both sides a thistle; legend JACOBUS D. G. ANG. SCO. FRAN. ET HIB. REX. Reverse, in an escutcheon, highly ornamented, the royal arms, quarterly—first and fourth, England and France, quartered; Scotland in the second; Ireland in the third. The arms of Ireland now appear for the first time upon the coins.

Fig. 14. A shilling of Charles I. Obverse, bust of the king turned to the right, crowned, and in armour, with long hair, the object of puritanical abhorrence; mint mark, on both sides, an anchor; legend CAROLUS D. G. MAG. BRI. FRA. HIB. REX. Reverse, arms of England, France, Ireland, and Scotland, on a plain square shield, and cross fleuré; legend CHRISTO AUSPICE.

Fig. 15. A shilling of Cromwell. Obverse, bust in profile to the right, laureat, with a Roman mantle; legend OLIVAR. D. G. R. P. ANG. SCO. HI. &c. PRO. Reverse, in a shield, surmounted by an imperial crown, quarterly, first and fourth, St George's cross for England; second, St Andrew's cross for Scotland; third, the harp for Ireland. On an escutcheon of pretence a lion rampant; legend PAX. QUÆRITUR. BELLO. 1658.

Plate LXIII. we have devoted to Scottish coins. With regard to the coinage of Scotland, it is believed that there exist silver pennies of Alexander I., who reigned in 1107; and there certainly are some of Alexander II. in 1214, as also of David in 1124. There are many coins of William I. in 1165; and a large hoard of his pennies was found at Inverness in 1780. The money of Scotland was of the same value with that of England, until the vast drain occasioned by the enormous ransom of David II., after which its size was reduced; and its value continued to diminish to such a degree, that in 1600, it passed only for a twelfth part of the English money, and remained at that low ebb until the union of the two kingdoms.

The only silver coin was the penny, until the year 1293, when Alexander III. coined also halfpence; and there are silver farthings of Robert I. and David II. The groat and half-groat were also introduced by the latter, which completed the set of Scottish silver. These all ceased to be coined in the time of queen Mary; when shillings were first coined, with the bust of the queen on one side, and the arms of France and Scotland on the other. The silver crown, of the value of 30s. Scots, was first coined in 1565; smaller pieces of 20s. and 10s. were likewise struck, and marks of silver, worth 3s. 4d. English. These coins have the mark XXX., XX., X., upon them, to denote their value. The motto, Nemo me impune lacesset first appears on Scottish coins in 1578. The crown of an ounce weight gradually increased in nominal value, until, in 1601, the mark was LX. In the time of Charles I., half marks, 40, and 20 penny pieces, were coined. In 1665, the Scottish dollars first appeared, in value 56s. Scots, with the half and quarter of proportional value. In 1686, James VII. coined 60s., 40s., 20s., 10s., and 5s. pieces; but only those of 40s. and 10s. are known. At the union of the kingdoms, all the Scottish coins were called in and recoined at Edinburgh, with the mark E. under the bust. In general, the Scottish silver coins are equal, if not superior, in execution, to the English.

Gold was first issued in Scotland by Robert II. The pieces were at first called St Andrews, from the figure of that tutelar saint upon the cross. The lion was another name for the largest gold coins, from the arms of the kingdom upon it. Then comes the unicorn under James III.; which was followed by the bonnet-pieces of James V.; which last are of admirable workmanship. The last gold coined in Scotland consisted of the pistole and half pistole, of twelve and six pounds Scots, which have the sun under the head.

The Scottish copper coinage is of an earlier date than that of England. It was preceded by money of billon, called black money, consisting of copper washed with silver. The true copper coinage began in the time of James VI. The *bodle,* so called from Bothwell the mint-master, was worth two pennies Scots. The *baw-bee* (*bas piece*) was also coined, corresponding with the English halfpenny. Some pieces called Atkinsons were also coined by James VI. in 1582, which went for a third more than the value of the baw-bee. Besides these, there were the hardie and the plack, the former worth three the latter four pennies Scots. The Scottish coins of Charles I. are very rare.

We now proceed to describe the coins represented in Plate LXIII.

Fig. 1. A penny Scots of William, surnamed the Lion, who succeeded his brother Malcolm IV. in 1165. The king is represented in profile. The legend is *Le Rei Wilam.* On the reverse the name of the coiner and the place where coined—*Adam on Edenebu*—are given. Five different places of mintage appear of this king's coin, viz., Edinburgh, Berwick, Perth, Roxburgh, and Stirling.

Fig. 2. A penny of Alexander III., who succeeded his father in 1249. Legend *Alexsander Dei Gra:* reverse *Rex Scotorum.*

Fig. 3. A penny of Robert Bruce, who obtained the crown in the year 1306. Legend *Robertus Rex Scottoru:* reverse *Villa de Perth* (town of Perth.)

Fig. 4. A coin of Robert III., with the royal arms crowned, and St Andrew's cross on the reverse. See fig. 8.

Fig. 5. A farthing of David II., who succeeded his father in 1329.

Fig. 6. A groat of the same monarch. Legend *David Dei Gra Rex Scotorum:* reverse *Dns Ptector MS et Libator MS,* i. e. *Dominus protector meus et liberator meus.* Inner circle, *Villa Aberdon.*

Fig. 7. A halfpenny of Robert II., who succeeded to the throne in 1371. Reverse legend *Villa Edinburg.*

Fig. 8. A small coin of Robert III., who succeeded his father, Robert II., in 1390. Reverse legend *Villa de Perth.*

Fig. 12. A groat of James I., who succeeded his father in 1406. Legend *Jacobus Dei Gratia. Rex Sco.* Reverse *Dns Ptector MS et Libator.* Inner circle *Villa Edinburgh.*

Fig. 9. A groat of James II., who succeeded to the throne in 1437. Legend *Jacobus Dei Gra Rex Scottorum.* Reverse *Dns Ptector MS Liberator MS* (explained above.) *Villa Edinburgh.*

Fig. 11. A groat of James III., who succeeded to the throne in 1460. Legend *Jacobus Dei Gra Rex Scotorum.* Reverse *Dns Ptector MS et Lebcrato. Villa Edinburgh.*

Fig. 10. A groat of James IV., who was crowned in 1488. Legend *Jacobus Dei Gra Rex Scottoru Qra* (i. e. *Quarta* or IV.) Reverse *Salvum Fac Populu tuu Dne. Villa Edinburge.*

Fig. 13. A groat of James V., who succeeded his father in 1514. The king's head in profile regarding the left. Legend *Jacobus* 5 *Dei Gra Rex Scotor.* Reverse: the arms of Scotland in the centre of the great cross of Malta, which reaches to the edge of the piece. Legend *Oppidu Edinburgi.*

Fig. 14. A testoon of queen Mary, who succeeded her father, when only a week old, in 1544. The widowed head of the queen, regarding the right; underneath a scroll, with the date 1562. Legend *Maria Dei Gra. Scotorvm Regina.* Reverse: in a shield, the royal arms of France are half effaced on the dexter side by those of Scotland on the sinister, having on each side an M crowned. Legend *Salvvm fac. Populvm tvvm Domine.*

Fig. 15. A half-merk of James VI., who was placed on the throne, on his mother's resignation, which happened in July, 1567, when he was but a year old. The king's bust bareheaded, looking to the left, in armour. Legend *Jacobus* 6 *D. G. R. Scotorum.* Reverse: a three-headed thistle crowned. Legend *Nemo me impune lacesset,* 1595.

Fig. 16. A sixpence of the reign of Charles I. who succeeded his father in 1625. King's head crowned. VI behind the head to denote the value of the piece. Reverse: the arms crowned; C. R. crowned at the side of the shield. Legend *Quæ Deus conjunxit nemo sep.*

Fig 17. A merk (date 1669) of the reign of Charles II., who succeeded to the crown in 1660. The XIII. in the centre of the reverse denotes its value.

Fig. 18. A coin of the reign of James VII. (II. of England) who succeeded to the throne in 1684. The only two coins this monarch struck in Scotland were the 40s. and 10s. Scots money. The 10 beneath the head denotes the value of this piece.

Fig. 19. A coin of William and Mary, who supplanted James II. in 1688. The figure 10 denotes it of the same value as the preceding

Fig. 20. A coin of queen Anne, who succeeded to the crown in 1701. There were but two coins of this reign struck in Scotland, the ten and five shillings Scots. The 5 on the present piece marks its value.

Numismatics appears to have been entirely unknown as a science to the ancients. It does not appear from any ancient works, that any value was set upon coins as curiosities by the collectors of works of art, in the times of Augustus and the Antonines, though there were, at that time, series of coins of cities, some of which have come down to us, and attract attention on account of their antiquity, and the beauty of their execution. Such are the coins of Sybaris, and the cities of Magna Græcia, which, with their independence, lost the right of coinage. This disregard is more remarkable, as gems, which are so nearly allied to them, were in high esteem; but, in the fifteenth, and particularly in the middle of the sixteenth century, princes and private individuals, particularly in Italy, France, and Germany, rivalled each other in zeal for collecting these remains of antiquity, at first, principally with a view of obtaining portraits of the chief characters of Roman history. Learned treatises soon succeeded these first collections, in which the chief attention had been paid to striking impressions. The earliest treatise upon numismatics was published by a Spaniard, Antonio Agostino, in 1577, in his dialogues, which have been translated into all languages. Jac. and Octav. Strada, by works illustrated with plates, drew the attention of the great and the rich to this subject. Wolfgang Lazius, physician to Ferdinand I., made use of coins for the illustration of history. Fulvio Orsini and Ad. Occo, a physician at Augsburg, applied themselves to the study of the Roman family and imperial coins; and it is to be regretted that the latter restricted himself so much in his inquiries, for his process, with respect to chronological arrangement, was confessedly good. Hub. Goltz, the son of a painter of Wurtzburg, is particularly worthy of mention, as the first who paid much attention to Grecian coins; but there is a want of accuracy in the writers of that period, which renders a great part of their labours useless. Goltz was at once a draughtsman and an engraver, but suffered himself to introduce so much of his own invention into his engravings of coins, that they are liable to suspicion in many cases where they may have been correct. Meanwhile, the art of imitating the genuine antique coins began to be practised. At first, without any intention of deceiving, but merely to facilitate the study, the skilful die-cutters, Cavino, Belli, &c., at Padua, Parma, and Vicenza, made imitations of ancient coins; but these imitations were afterwards passed off for genuine, and soon became an article of trade, which has continued to this day.—See Sestini's *Sopra i moderni Falsificatori di Medaglie Greche antiche, etc.* (Florence, 1826, 4to.)

The great numbers of counterfeit coins deterred many, during the period which now commenced, from the study of numismatics; at least, it lessened the taste for this study, always difficult on account of the learned apparatus necessary; but the researches into separate departments of the science became more extensive, and the works of Vaillant, Spanheim, J. J. Gessner, Pellerin, not to mention numerous others, who have applied immense stores of learning to the illustration and explanation of numismatics, are well worthy of attention, though they are not to be implicitly trusted. The materials had now so much increased by the accumulation of newly-discovered pieces (Vaillant visited the East several times; Pellerin added to the Parisian cabinet alone 33,000 ancient coins), that a critical selection and arrangement of the genuine became doubly necessary, in order to facilitate a general survey of them. Joseph Eckhel undertook this task with success, and, by a strict geographical and chronological method, introduced so much order into this science, that great light was shed upon many obscure points of history and archæology. His system was first practically applied by himself to the arrangement of the cabinet at Vienna, and afterwards presented in an improved form in his great work *Doctrina Numorum veterum* (Vienna, 1792—98, 8 vols., 4to.), to which all later researches can only be considered as additions or improvements. Domenico Sestini followed this system in his works upon the numismatic Hermæ—*Lettere e Dissertazione Numismatiche* (10 vols.); Mionnet, in his *Descr. des Médailles Grecques antiques* (a fifth supplementary volume of which has already appeared). The investigations into the mixtures of metals, and the execution of the stamps; the form, size, weight, value, and number of the ancient coins; their genuineness or spuriousness, become susceptible of more certainty, by the accumulation of materials of comparison; and the understanding of the types and legends is also facilitated by similar means. The coins of the middle ages, which have from time to time been brought to light, are now sought for with zeal. By pursuing the same method with the modern as with the ancient coins, arranging them in a strictly chronological order, they have been made to shed light upon subjects which manuscripts had left unexplained.

The separate works upon the coins of different countries, such as those by Lastonaso for Spain, Zanetti for Italy, Le Blanc for France, Leake for England, Bicherodt for Denmark, &c., Becker for Germany, Voigt for Bohemia, and others, afford a mass of materials, but are sometimes open to criticism. We should here also mention K. F. W. Erbstein's Numismatic Fragments relative to Saxon History, together with an Appendix of the remarkable Coins of the Middle Ages (Dresden, 1827, in German; and Chr. Jak. Goetz's Imperial German Coins of the Middle Ages, containing 600 coins from Charlemagne to Maximilian I., in fifty-two lithographic plates, with descriptions (Dresden, 1828). The modern coins and medals are more valuable as specimens of art than as historical guides. They are, as Herder has remarked, a striking proof of the varieties of taste. There a view of the progress of numismatics is facilitated by the splendid works, entitled *Histoires Métalliques*, such as those of Louis XIV., XV., Napoleon, &c. Some authors have treated of particular coins—Lilienthal's Cabinet of Dollars (*Thalercabinet*); Koehler's Cabinet of Ducats (*Dukatencabinet*); Boehme's Cabinet of Groschen (*Groschencabinet*), &c.; and this method renders a more minute examination practicable. L. Ch. Schmieder's Dictionary of Numismatics—*Handwörterbuch der gesammten Münzkunde* (Halle and Berlin, 1811—15) is a truly learned manual. The literature of numismatics is prolific; and there are several works which will assist the student in a general view of the science, such as *Banduri Bibliotheca Nummaria, seu Auctorum qui de Re Nummaria scrips., ed. a I. A. Fabricio* (Hamburg, 1719, 4to); *Lipsius Bibliotheca Nummaria, etc.* (Leipsic, 1801, 2 vols.); but a work is yet wanting which shall give a full view of the actual state of the science.—See also Pinkerton's *Essay on Medals* (2 vols., 8vo, London, 1789); Evelyn's *Numismata* (folio, 1697); and Addison's *Dialogues on ancient Medals* (London, 1726).

NUNCIOS; the persons sent by the pope on foreign missions which concern ecclesiastical affairs. (See *Legate*). The Roman bishops had agents at the court of the emperors from the fourth century, under the name of *apocrisiarii* and *responsales*. It was not till the ninth century, that the increasing power of the pope occasioned extraordinary missions of legates to provincial synods and foreign courts, when subjects of great importance were to be considered. In the eleventh century, Nicholas II. and Alexander II. sent such representatives *ad visitandas provincias*, to root out heresies, with unlimited power—a measure of which Gregory VII. and his successors, of course, eagerly availed themselves. The legates presided at the synods which they convoked, and decided in the most important ecclesiastical affairs. Many bishops procured the office of legate for themselves, in order to prevent the entrance of foreign legates into their dioceses; but neither this precaution, nor the open resistance of the German bishops, could prevent the inroads of papal power. England freed herself from this intrusion by having the archbishop of Canterbury declared perpetual legate in the twelfth century, and Philip the Fair, king of France, even dared to arrest a papal legate, in the fourteenth century. The German bishops had succeeded, down to the fifteenth century, in preventing the establishment of permanent legates, and their tribunals; but, when the reformation pressed the German Catholic church extremely hard, the pope succeeded in introducing them. Thus originated four permanent *nuntiaturæ*, with archiepiscopal privileges, at Vienna, Cologne, Lucerne, and Brussels; and, in spite of the struggles of the clergy, Pius VI. even established a new one at Munich, in 1785. Joseph II., October 12, 1785, denied the right of the nuncios to jurisdiction in ecclesiastical affairs, and the archbishops of Mayence, Treves, Cologne, and Salzburg, agreed, at the congress of Ems, to limit the popes to the privileges which they had enjoyed in the first centuries over foreign dioceses. But the elector of Bavaria supported the nuncio Zoglio, and the party of the nuncio, at Brussels, who had been at first driven away, was victorious during the troubles in the Netherlands, excited by the measures of the emperor Joseph; and, in Germany, the bishops of Wurzburg, Spire, Hildesheim, and Liege, formed a party opposed to the above-mentioned archbishops. Joseph II. could no longer support the latter, on account of the dissatisfaction of his own subjects, and, after his death, in 1790, the old state of things was restored, and the power of the pope became firmer than before, until the French revolution changed the face of Europe. At present, the nuncios at Munich and Vienna can do nothing without the consent of the courts, and, in Austria, every clergyman is prohibited from transacting business with the pope through his nuncio. The nuncio in Lucerne, restored in 1803, enjoys the greatest remains of a power incompatible with the advancement of civilization. See *Internuntius*.

NUNIA; a village of Irak Arabi, on the east side of the Tigris, opposite to Mosul; supposed to be on the site of the ancient Nineveh. Here are mounds similar to those of Babylon. The first is about a mile from Mosul, and is nearly a mile in circuit. The second, considerably higher, but less extensive, is crowned by a building with a cupola, and is said to be the tomb of the prophet Jonah, and is visited by the Jews as a place of pilgrimage. Similar mounds may be traced farther up for several miles.

NUNS. See *Monasteries.*

NUOVO (Italian for *new*) appears in many geographical names.

NUREMBERG, formerly a free imperial city of Germany, famous, in the middle ages, for its extensive commerce, situated in the ancient circle of Franconia, was given to Bavaria by the act of the German confederacy, and taken possession of September 15, 1806. It had, in 1822, 31,660 inhabitants within the walls: the suburbs contain 5770. The small river Pegnitz divides the city into two parts; lon. 11° 4′ 23″ E.; lat. 49° 26′ 55″ N. The inhabitants are mostly Lutherans. Like Pisa (though not to the same degree), Nuremberg is distinguished for traces of ages long gone by—monuments, churches, houses, which remind the beholder of ancient times, and render it, for every lover of history, and particularly for every German, a peculiarly interesting place. The ancient castle, on a hill, contains the public gallery of pictures, with many paintings on glass. The city hall, 275 (German) feet long, is a famous building, in which many pictures of Albert Durer are still preserved. The Gothic church of St Lawrence, the beautiful church of St Sebaldus, with the exquisite bronze cenotaph, the church of St James, and the restored church of St Giles, the arsenal, and other buildings, are ornaments to the city. The library of the city is considerable; the high school good. It has a polytechnic school, a conservatory of antiquities and Nuremberg works of arts, and an academy of fine arts. Before the passage to the East Indies round the cape of Good Hope was discovered, Nuremberg was one of the greatest commercial places in the world, as it was the great mart of the produce of the East, coming from Italy, and going to the north. But the change in the commercial world, the devastations of the thirty years' war, and the antiquated institutions of the city, put a stop to her prosperity. Yet the manufactures of the place are still very considerable: it manufactures brass, steel, and iron wire and wares, looking-glasses, musical instruments, maps, engravings, &c. The toys made here go to all parts of the world, as the frugal habits and great industry of the inhabitants, assisted even by young children, enable them to make them very cheap. The income of this once imperial city is valued at 800,000 florins. She possessed a territory of about 490 square miles, with 40,000 inhabitants. Information respecting her former history and works of art is to be found in the *Nürnbergisches Taschenbuch* (2 vols., 1821 and 1822), of which *Der Sammler für Kunst und Alterthum* (1824 et seq., with engravings) is a continuation. The society of artists and friends of the arts are publishing a work called *Die Nürnberger Künstler, geschildert nach ihrem Leben und Wirken.*—Nuremberg gingerbread is famous among the boys and girls of Germany.

NUTATION (from the Latin *nutatio*) of the axis of the earth. In the article *Precession of the Equinoxes*, the reasons are given why the axis of the globe undergoes annually a change of position of about 50″, on account of the irregularity in the attractions of the sun and moon, occasioned by the spheroidal form of the earth. Of these 50″, 30″, on an average, are referrible to the attraction of the moon. But she cannot produce this effect regularly, on account of her own change of position; and there result from these changes not only inequalities in the quantity of the precession of the equinoxes, but also a small motion or *nutation* in the axis of the earth, or in the plane of the equator, in consequence of which the stars appear sometimes to approach the equator, at other times to recede from it, varying from their mean place about nine seconds and a half. This apparent change in the declination of the stars was first discovered by observation by Bradley, and the physical causes of it were explained by D'Alembert and others. It is obvious that a change in the position of the moon towards the earth must produce a change in the attraction of the moon upon the spheroidal part of the earth. Now, this position is affected considerably by the change in the situation of the moon's nodes, which are subjected to an annual motion of about 18°, completing a revolution round the heavens in about eighteen or nineteen years. In consequence of this, the position of the moon's orbit to the equator can vary 10°, and the change in the attraction of the moon on the spheroidal part of the earth, arising from this change of inclination, produces the nutation of 9½ seconds, the period of which is about eighteen or nineteen years. The precession and nutation alter the right ascensions, declinations, and longitudes of the heavenly bodies; the latitudes remain unchanged. D'Alembert (in his *Recherches sur la Précession des Equinoxes et sur la Nutation* (Paris, 1749, 4to) and Laplace (*Mécanique Celeste*) have succeeded, by analysis, in reducing all these intricate phenomena to the law of gravity with the most complete success, and the corrections, calculated thereupon, and contained in the astronomical tables, agree most perfectly with observations.

NUTGALLS. See *Gall*, *Gall Fly*, and *Gallic Acid.*

NUTHATCH (*sitta*, Lin.); a genus of birds somewhat allied in their habits to the woodpeckers. They are distinguished as follows:—Bill moderate, very hard, conic-subulate, subrounded, a little compressed, straight, edges sharp, mandibles equal, lower usually having a small angle; nostrils basal, orbicular, open, half closed by a membrane, and covered by bristly feathers; tongue short, cartilaginous, bony, and jagged at tip; feet robust, hind-toe elongated; wings moderate; tail rather short, having twelve feathers, rounded at tip. The sexes are similar, and the young differ but little from the adults. These birds are found in all cold and temperate climates. They are generally solitary, live in woods, climbing the trunks and branches of trees in pursuit of insects, which are their principal food, though, when these are scarce, they will eat nuts and fruit. It is from their ability in cracking nuts that they have obtained their various common names.

NUTMEG. The use of this fruit for culinary purposes is well known, and is now every where familiar throughout the civilized world. With the East Indians it is, besides, employed as a masticatory. It does not, however, appear to have been very anciently known, at least among Europeans; for the Greeks and Romans have left no account of it, and it is first mentioned by the early Arabian writers.

The tree (the *myristica moschata* of botanists) is a native of the Molucca islands, and is remarkable for the beauty of its foliage. It attains the height of about thirty feet, and the branches are disposed four or five together, almost in whorls, forming a rounded and very dense summit. The leaves are alternate, petiolate, smooth, oval-lanceolate, of a fine green colour above, and paler beneath. The flowers are diœcious, small, yellowish, and inconspicuous. The fruit is a drupe, about as large as a peach, smooth externally, and yellow when it arrives at maturity: the outer envelop is fleshy, and opens at the summit into two valves, disclosing the scarlet mace, which forms the second envelop: the mace is a fleshy, fibrous membrane, having a reticulated appearance, which turns yellow with age, and becomes brittle when dry: the third envelop is thin, hard, and blackish-brown: the nut, or, more properly, kernel, consists of a very firm, white, oily substance, penetrated with numerous irregular branching veins. The tree constantly bears flowers and fruits of all ages, and its leaves fall so insensibly that the loss is not perceived. About nine months are required to bring the fruit to maturity. Mace is very commonly employed as a culinary spice, and resembles the nutmeg in taste and odour, but is more pungent and bitter.

For a long time, the Dutch had the monopoly of the commerce in nutmegs; but, about the year 1770, it was introduced into the Isle of France, and thence passed into Surinam, the West Indies, and other parts of tropical America.

NUTRITION. See *Aliment*, *Chyme*, and *Dyspepsia*.

NUX VOMICA (*strychnos nux-vomica*); an East Indian tree of moderate size, belonging to the natural family *apocineæ*. All parts of the plant are bitter, but not milky. The leaves are opposite and entire; the corolla monopetalous and tubular, surrounding five stamens and a single style. The fruit is globular, about as large as an orange, and contains several seeds. These seeds are circular, flat, with a prominence in the middle on both sides, of a gray colour, and covered with a woolly substance, but, internally, hard and horny. They have been long known in commerce under the name of *vomic nuts*, and it has been pretended that they may be taken by men with impunity, although an exceedingly violent poison to other animals. Experience has not borne out this assertion, and it is now generally rejected from the *materia medica* as a deleterious drug. The seeds are, however, employed in the distillation of ardent spirits in many places, and are frequently used for poisoning noxious animals.

NY (Danish and Swedish for *new*) appears in many geographical names, as *Nyland* (Newland).

NYEVRE; a department of France. See *Department*.

NYL-GHAU, (*Antilope picta*), in zoology; an animal brought from the East Indies, and described for the first time by doctor Hunter. In size it seems to be a mean between black cattle and deer, and in its form there is a mixture of resemblance to both. Its body, horns, and tail are not unlike those of a bull, and the head, neck and legs are very like those of a deer. The colour, in general, is ash or gray. The height of the back is about four feet, and the trunk, from the root of the neck to the pendulous tail, is about the same length: the horns are seven inches long, and of a triangular shape. It eats oats, is fond of grass and hay, and still more so of wheat bread. It is vicious and fierce in the rutting season, but at other times tame and gentle. The female differs much from the male, is shorter and smaller, resembles the deer, and has no horns. The young nyl-ghau is like a fawn.

NYMPH, in natural history; another name for the *pupa chrysalis*, or *aurelia*; the second state of an insect passing into its perfect form.

NYMPHS; youthful demi-goddesses of the Greeks. Begotten by Oceanus, or by Jupiter and others, with his daughters (Oceanides), they preserve and nourish the woods, rivers, springs, and mountains. They are therefore distinguished according to their offices, as Leimoniades, for example, nymphs of the meadows; Dryades, or Hamadryades, wood-nymphs; Oreades, or Orestiades, mountain-nymphs: these, dressed lightly, as huntresses, were the companions of Diana: there were also Naiades, who presided over fountains, Potamides, over rivers, Limniades, over lakes, Nereides, over seas, Napææ, over vales, &c. They were also named from the places where they dwelt—Dodonian, Corycian, Nysæan, Dictæan, Nysiades, &c., for example. They are all females, holding a middle station between gods and mortals, and, without being immortal, they yet live longer than is permitted to man. The crow, says Hesiod, lives nine times longer than a man, the stag four times longer than the crow, the raven three times longer than the stag, the phœnix nine times longer than the raven, and the nymphs nine times longer than the last. At their death, the substance which they have supplied with nourishing moisture perishes also. This first notion of nourishment, which is supposed in the very idea of a nymph, seems to have given origin to the second representation of them as nurses of young children intrusted to their care. Thus they are said to have educated Bacchus, Æneas, and even Jupiter. Their occupations and diversions are hunting, dancing, and female labours, to perform which, they sometimes assemble in grottoes. Like other spirits of the elements, they possess the power of divination. The fountains of certain Naiades, moreover, possess the gift of inspiration. The poets and artists of antiquity represent them in the beauty of youth, clothed in light garments, sometimes in company with Diana, and sometimes dancing with Venus and the fawns. The nymphs of the water are often represented merely with an urn or pitcher. From the great consequence which nymphs possess as local goddesses, frequent sacrifices are offered to them. Oil, milk, sheep, lambs, goats, wine, and flowers, were sacrificed to them. The *nymphæa* (splendid houses near baths) were also sacred to them.

NYSTADT, PEACE OF, September 10, 1721. See *Northern War*.

O

O; the fourth vowel and the fifteenth letter in the English alphabet, pronounced by pointing the lips, and forming an opening resembling the letter itself: the (so called) *open o* is pronounced with less pointed lips. In proportion as the lips are more opened, the sound passes over into that of *a* (pronounced as in *father.*) In proportion as they are less pointed, yet remain projected, the sound passes over into that of *u;* a consequence of which is, that *o,* in various dialects, passes over into *a* and *u,* also into *e* (pronounced as in *met.*) The English language designates not less than four sounds by the character *o,* exemplified in the words *no, move, nor, not,* whilst there exist, on the other hand, other ways of denoting some of these sounds, as *au, eau.* The French indicate the sound *o* (pronounced as in *no*), by various signs. In German, there is only a long and a short *o,* and no way of designating these sounds, but by the letter itself; in Italian, an open and a close *o.* The case is very similar with the other languages of western Europe. The Greeks, it is well known, had two different signs for the long and the short *o,* the ο (*omicron,* or short *o*) and ω (*omega,* the long *o;* see *Omega.*) In the article *A,* it was said that *a* (as in *father*) was used more than any other letter to express various and even opposite emotions. The use of *o* is next in frequency to that of *a:* it is used particularly to express admiration, warning, pity, imploring; and, in general, as introductory to language expressive of great emotion. In all languages, the interjection *O* is to be found; in Greek, ὦ, ἰὼ; in Latin, *O oh. O!* and *oh!* are the common forms in modern languages. The Romans change the Greek syllable *os* into *us;* and the Italians again made of *us* and *um, o* (see the article *M*); *bonus,* for instance, they made *bono:* the same change often takes place in Spanish.

O in inscriptions signifies *optimus;* as, *I.,* or *D. O. M., Jovi,* or *Deo Optimo Maximo,* the frequent inscription on temples; *O. P., optimo principi. O* also is, on many coins, the initial of places and persons.

O is the name given to the nine anthems which are sung in the Catholic church nine days before Christmas.

O, with an apostrophe after it, signifies *son,* in Irish proper names; as, *O'Connell* (the *son of Connell*), like the prefix *Mac.*

In French geography, *O* stands for *ouest,* that is, *west;* in German, for *ost,* that is, *east.*

In masonry it is used for *Orient.*

As a numeral, it signified 70 with the Greeks; and in middle Latin, it signified 11; with a dash over it, 11,000, according to the verse,

O numerum gestat qui nunc extat undecimus.

O, in several words of the Northern languages, has the force of the Greek *a* (*privative*), having originated from the negative syllable *un,* as *otrogen* (in Swedish), faithless; *osmaklig,* tasteless.

O, in Hungarian, signifies *old,* which is added to many geographical names, in contradistinction to *ui* (new).

OAK (*quercus*). Among the most useful of the productions of temperate climates are the different species of oak, truly the pride of the northern hemisphere, to which part of the globe they are almost exclusively confined, with the exception of a few on the mountainous parts of the equatorial regions. They are shrubs, or trees, many of them of the largest size. More than eighty species are known. This genus belongs to the natural family *amentaceæ.* The leaves are alternate, simple, either entire, or, more commonly, incised, or lobed. The flowers are monœcious, inconspicuous, and the sterile ones are disposed in loose aments. The fruit consists of an ovoid nut, included at base by the cup-shaped, persistent involucrum. The common European oak (*Q. robur*) is a tree of the first consequence, on account of the qualities of its wood. It attains the height of from 60 to 100 feet, with a trunk six to twelve, or more, in circumference. The wood is superior in solidity and durability to any other in Europe, and is employed for a vast variety of purposes, and, above all, for shipbuilding; indeed, it is the chief reliance of the European navies. Before the introduction of mahogany, it was very generally used for furniture, and, besides, furnishes the best fuel. Except in the north of Russia, the bark is exclusively employed, throughout Europe, for tanning; and that from the small branches is preferred, because the epidermis is thinner, and the cellular integument, which contains the tannin, is more abundant. In ancient times, the acorns formed an important article of nutriment to some of the northern nations, and, among others, to the former inhabitants of Great Britain.

OAKUM; the substance into which old ropes are reduced when they are untwisted, loosened, and drawn asunder. It is principally used in calking the seams, tree-nails, and bends of a ship, for stopping or preventing leaks.

OAR; a long piece of timber, flat at one end, and round or square at the other, used to make a vessel advance upon the water. The flat part, which is dipped into the water, is called the *blade,* and that which is within the board is termed the *loom,* whose extremity, being small enough to be grasped by the rowers, is called the *handle.* To push the boat or vessel forwards by means of this instrument, the rowers turn their backs forwards, and, dipping the blade of the oar in the water, pull the handle forward, so that the blade, at the same time, may move aft in the water. But since the blade cannot be so moved without striking the water, this impulsion is the same as if the water were to strike the blade from the stern towards the head: the vessel is therefore, necessarily moved according to the direction. Hence it follows, that she will advance with the greater rapidity, by as much as the oar strikes the water more forcibly; consequently, an oar acts upon the side of a boat or vessel like a lever of the second class, whose fulcrum is the station upon which the oar rests on the boat's gunwale.

OASIS (*Coptic,* an inhabited place); a fertile spot, situated in the midst of the uninhabitable deserts of northern Africa: the name is also applied to a cluster of verdant spots. They serve as stopping-places for the caravans, and often contain villages. In the desert of Sahara there are thirty-two of these regions which contain fountains, and date, and palm-trees: twenty of them are inhabited. Those of the Libyan desert are the following:—the Great Oasis, of which the principal town is El Kargeh; it consists of a number of insulated spots, extending, for about a hundred miles, in a line parallel with the Nile; it is the first stage of the Darfour caravan, and it contains interesting ruins:—the Little Oasis, or that of El Wah, or El Kassar, of which the best account has been given by Belzoni; the Northern Oasis, or that of Siwah (29° 12′ N.; lon. 26° 6′ E.), inhabited by a population of about 8000 souls, and supposed by some to contain the ruins of the temple of Jupiter Ammon:—the Western Oasis (lat. 20° N.), first visited by Edmondstone in 1819, is composed of twelve villages.—See his *Journey to the Oäses of Upper Egypt* (London, 1823); see also the Travels of Browne, Henniker, and Caillaud.

OAT (*avena*). The species most commonly cultivated is the *A. sativa*, a grass, bearing a few large flowers, which are disposed in a loose panicle, frequently inclined in one direction. The calyx consists of two valves, enclosing several florets, bearing on their outer valves a twisted awn. The seed is oblong and pointed at each extremity. Another species, the *naked oat* (*A. nuda*), differing only in not having the seed adherent to the floral valves, and perhaps only a variety, is also frequently cultivated. The native country of these two species, like that of our other cultivated grains, is entirely unknown. They succeed only in cold and moist climates, and the seed is employed indifferently for the same purposes. The meal is nutritious, and, in some countries, forms an important article of food; the bread made of it is of a good quality, and is extensively used in Scotland. Beer is made from this grain in Britain and Poland; and it is, besides, distilled to procure ardent spirits. Oats are the best food for horses, and for this purpose are principally cultivated. They are also recommended as a good winter fodder for sheep, a handful to be given daily.

OATES, Titus. This infamous character was born about 1619. He was the son of an Anabaptist preacher, and was educated at Merchant Tailors' school, whence he removed to Cambridge, and afterwards took orders. In 1677, he pretended a conversion to the Roman Catholic religion, and was admitted into the society of Jesuits; but subsequently declared himself a Protestant, and, in conjunction with one doctor Tonge, gave information of a pretended popish plot, for the destruction of the Protestant religion, and falsely accused the Catholic lords Petre, Powis, Bellasis, Arundel of Wardour, and other persons of quality, of being concerned in the conspiracy, several of whom, including lord Stafford, were executed. Such was the credulity of the times, that he was rewarded with a pension of £1200 per annum, and lodged, for safety, at the palace of Whitehall. On the accession of James II., however, he was thrown into prison, and indicted for perjury; and, being convicted, was sentenced to stand in the pillory five times a year during his life, and to be whipped from Aldgate to Newgate, and thence to Tyburn; the last part of which sentence was executed with great severity. At the revolution, the current of popular prejudice again setting in in his favour, he was rewarded with a pension of £1000 per annum. In 1698, he sought to be restored to the congregation of Anabaptists, to which he had at first belonged; but in the course of a few months he was excluded, as a hypocrite and disorderly person. He died in 1705. In early life, he had been chaplain on board the fleet, from which he was dismissed for unnatural practices. See *Popish Plot*.

OATH (in Latin, *jusjurandum*, *juramentum*); a solemn assertion or promise, with the invocation of God to be a witness of the truth of what we say; hence the end of the judicial oath—"So help me God." Such an invocation is of very early origin, it being the most natural and solemn confirmation of the truth of what is said. Some sects consider oaths altogether as a violation of the command of Christ, "Swear not at all;" but this is not the proper place to discuss that point; the reader will find it treated in many works on moral philosophy, for instance, Paley's. Such a solemn invocation, however, should obviously be reserved for important occasions. The custom-house oaths, so numerous in Britain, can hardly fail to diminish the character of sacredness and obligation belonging to such a promise.

The obligation of an oath is variously considered by different religions and sects: some consider oaths binding even if the promise be, in itself, criminal, or has been extorted by extreme fear. The Greeks connected the idea of awful solemnity with an oath. In the middle ages, oaths were enormously abused, and, at the same time, most superstitiously observed. In that period, oaths were often obtained by fraud, and the promiser, nevertheless, considered himself absolutely bound by them. William the Conqueror, when he made his prisoner Harold swear to aid him in ascending the throne of England, "secretly conveyed under the altar, on which Harold agreed to swear, the reliques of some of the most revered martyrs; and, when Harold had taken the oath, he showed him the reliques, and admonished him to observe, religiously, an engagement, which had been ratified by so tremendous a sanction."—*Hume*, vol. i.

The pope is believed, by the Catholics, to have authority to absolve from the obligation of an oath; and this is a natural consequence of the papal attributes. In the middle ages, this gave him a fearful power.

In civil law, oaths are divided into two classes: 1. oaths by which something is asserted as true (*juramentum assertorium*), either because we know it from our own observation (*juramentum veritatis*), or because we consider it true after full investigation, or, at least, have no reason to doubt the fact (*juramentum credulitatis seu ignorantiæ*). Most oaths, in the forms of judicial process, are *juramenta assertoria*; for instance, the oath of a party that he has good cause to ask a delay of trial; also the oath offered by one party to the other, for the settlement of a fact in dispute (*juramentum delatum*); and the oath of valuation, by which a party asserts that he estimates the damage which he has suffered at such a rate. 2. The second class of oaths are the *juramenta promissoria*, by which we promise something: such are the oaths of princes to rule constitutionally, or to protect such a sect or interest, &c.; the oath of allegiance; the oath of office; the oath of witnesses, if they take an oath before testifying. Oaths to perform illegal acts do not bind, nor do they excuse the performance of the act. Perjury is the wilful violation of an oath administered by a lawful authority to a witness in a judicial proceeding. The breach of a promissory oath, whether public or private, is not punishable as perjury.

OAXACA; formerly, an intendancy in the vice-royalty of New Spain; at present, one of the states of the Mexican confederacy, comprising the greater part of the isthmus of Tehuantepec, between the gulf of Mexico and the Pacific ocean. It has the state La Puebla on the west, that of Vera Cruz and that of Tabasco on the east. The climate is healthy, and the soil fertile. The finest fruits, cotton, sugar, indigo, and wine, are among the productions. The mulberry tree was formerly extensively cultivated, and silk was produced in large quantities; but the natives, exasperated by the treatment of the Spaniards, extirpated it. Gold and silver abound. The cochineal plant thrives here better than in any other part of Mexico. The capital, of the same name, a handsome city, with 24,000 inhabitants, sixty-five miles from the Pacific, is situated in a delightful valley. The population of the state is about 600,000.

OBADIAH, or **ABDIAS**; one of the twelve minor prophets, who foretells the speedy ruin of the Edomites. The time when he lived is uncertain. Some have supposed him to be the same person as the Obadiah who preserved 100 prophets from the fury of Jezebel; but he probably flourished at a much later period.

OBEAH; a species of witchcraft practised among the negroes, the apprehension of which, operating upon their superstitious fears, is frequently attended with disease and death.

OBELISK (ὀβελισκος, and ὀβελος). Obelisks belong to the oldest and most simple monuments of Egyptian architecture, and are high four-sided pillars, diminishing as they ascend, and terminating in a small pyramid. Herodotus speaks of them, and Pliny gives a particular account of them. The latter mentions king Mesphres, or Mestres, of Thebes, as the first builder of obelisks, but does not give the time; nor is this king noticed either by Herodotus or Diodorus. It is probable that these monuments were first built before the time of Moses, at least two centuries before the Trojan war. There are still several obelisks in Egypt: there is one erect, and another fallen, at Alexandria, between the new city and the light-house; one at Matarea, among the ruins of old Heliopolis; one in the territory of Fajum, near ancient Arsinoe; eight or ten among the ruins of Thebes; the two finest at Luxor, at the entrance of the temple, &c. These obelisks, exclusively of the pedestals, are mostly from 50 to 100 feet high, and of a red polished granite (sienite); a few of the later ones are of white marble and other kinds of stone. At their base, they commonly occupy a space of from four and a half to twelve feet square, and often more. Some are adorned on all sides, and some on fewer, with hieroglyphics cut in them, sometimes to the depth of two inches, divided into little squares and sections, and filled with paint: sometimes they are striped with various colours. Some are entirely plain, and without hieroglyphics. The foot of the obelisk stands upon a quadrangular base, commonly two or three feet broader than the obelisk, with a socket, in which it rests. They were commonly hewn out of a single stone, in the quarries of Upper Egypt, and brought on canals, fed by the Nile, to the place of their erection. Several learned men have doubted this, and others have sought to prove it; but, according to the accounts of travellers, there are still to be found, in Upper Egypt, old quarries with obelisks already hewn out, or with places whence monuments of this form must evidently have been taken. Of their origin we know nothing with certainty. Perhaps the first images of the gods, which, at an early period, were nothing but stones of a pyramidal form, gave occasion to them. Thus the ancient image of Venus, at Paphos, was a pyramid of white marble. According to Herodotus, they were first raised in honour of the sun, and meant to represent its rays. This is confirmed by their name and their form. They might also have been raised to perpetuate the memory of certain events, since the hieroglyphics contained the praises of their gods and their kings, or inscriptions relating to their religious notions. It is not probable that they were intended for sun-dials, because their point did not throw a distinct shadow. They were afterwards, however, used for that purpose, and balls were placed upon the points of some, as was the case with that which Augustus had brought to Rome, and which he placed in the field of Mars, under the direction of the astronomer Manilius, in such a position that it could be used for a dial. It is well known that, among the ancient Egyptians, they made a principal ornament of the open squares and the temples, before the large gates of which two or more were commonly placed. For this purpose, they used only obelisks of considerable height. After the conquest of Egypt by the Persians, no more were erected, and the successors of Lagus adorned Alexandria with the obelisks of the ancient kings. The Roman emperors carried several of them from Egypt to Rome, Arles and Constantinople, most of which were afterwards overturned, but have been put together and replaced in modern times. Augustus, for instance, had two large obelisks brought from Heliopolis to Rome. One of them we have already spoken of. The other stood upon the Spina, in the Circus Maximus, and is said to have been the same which king Semneserteus (according to Pliny) erected. At the sack of Rome by the barbarians, it was thrown down, and remained broken, in three pieces, amidst the rubbish, until, in 1589, Sixtus V. had it restored by the architect Domenico Fontana, and placed near the church Madonna del Popolo. Under Caligula, another large obelisk was brought from Heliopolis to Rome, and placed in the Circus Vaticanus. It has stood, since 1586, before St Peter's church: it is without hieroglyphics; and, with the cross and pedestal, measures 126 feet in height. It is the only one in Rome which has remained entire. Its weight is estimated at 10,000 cwt. Claudius had two obelisks brought from Egypt, which stood before the entrance of the Mausoleum of Augustus, and one of which was restored in 1567, and placed near the church of Santa Maria Maggiore. Caracalla also procured an Egyptian obelisk for his circus, and for the Appian Way. The largest obelisk (probably erected by Rameses) was placed, by the emperor Constantius II., in the Circus Maximus at Rome. In the fifth century it was thrown down by the barbarians, and lay in pieces upon the ground, until Sixtus V., in 1588, had it raised upon the square, before St John's church of the Lateran, thence called the *Lateran obelisk*. It is beautifully adorned with sculpture. Its weight is more than 13,000 cwt.; its height, exclusive of the pedestal, 140 feet; with the pedestal, 179. Several others have been erected by succeeding popes. The famous obelisk, called *Cleopatra's Needle*, was presented by the pacha of Egypt to the king of England, in 1820. It was erected in Waterloo place, in London.—See Zoega, *De Origine et Usu Obeliscorum*, etc. (Rome, 1797, seq.). Champollion, Jr., has published, in Rome, copper-plate engravings of obelisks, with his explanations of the hieroglyphics. A. Fea has written a history of these monuments, with an account of their erection, to accompany Champollion's work.

OBER; German for *Upper*, appearing in innumerable German geographical names.

OBERKAMPF, CHRISTOPHER PHILIP; the founder of the manufacture of printed linens of Jouy, and of the cotton manufacture of Essonne, in France. He was born in 1738, in the territory of Anspach, in Germany, and was the son of a dyer, who, after exercising his occupation in several parts of Germany, had taken up his residence at Arau, in Switzerland. Young Oberkampf, having acquired the art of making printed linens, quitted his father at the age of nineteen; and, two years after, he commenced, on a small scale, a manufactory in the valley of Jouy. The design of the figures, the printing and the dyeing of the goods, were all performed by himself; and, in spite of various difficulties with which he was surrounded, he acted with such spirit and perseverance, that, in the progress of time, he collected a population of 1500 persons in a spot which had been almost a desert, and, by the supply of printed linens at home, put an end to the importations of those articles into

France. Louis XVI. conferred on Oberkampf letters of nobility; and, in 1790, the council-general of the department decreed him a statue, which mark of gratitude, however, he declined. In 1793 his life was in danger, but he escaped proscription. Some years after, he was offered a place in the senate, which he refused; but he accepted the cross of the legion of honour, bestowed on him by Bonaparte. Oberkampf, in the latter part of his life, established a cotton manufactory at Essonne, and thus naturalized that important branch of industry in France. The commotions which accompanied the overthrow of Bonaparte had a disastrous influence on the manufactories of Jouy, and deeply afflicted the mind of the proprietor, whose death took place, October 4, 1815.

OBERLIN, Jeremiah Jacob, professor and librarian in the university at Strasburg, born in 1735, was, in 1750, among the number of the students of this university, and defended, in 1754, his Dissertation Concerning the Burials of the Ancients, by which he obtained the degree of doctor. After he had finished his philological and philosophical course, he studied, for three years, the philological and antiquarian department of theology, and then turned his attention to languages, literature, archæology, history, and diplomatics. He began his career as teacher in the gymnasium and adjunct in the library of his native place, and was transferred to the university, after he had extended his knowledge and reputation by his travels. The revolution drew Oberlin from his literary activity into the bustle of political life. He suffered an imprisonment at Metz; but, after tranquillity was restored, he returned to his former course. He died at Strasburg, in 1806. His editions of some works of Ovid, Horace, Tacitus, and Cæsar, are valuable. We will mention his *Miscella. literaria Argentoratensia; Museum Schoepflini* (1st vol.; the 2nd vol. of which has never appeared); *Orbis antiqui Monumentis suis illustrati Prodromus; Rituum Romanorum Tabulæ; Artis diplomaticæ primæ Lineæ* (the last mentioned elementary works served him as a guide in his academical instructions); *Literarum omnis Ævi Fata, Tabulis synopticis exposita* (these tables give the names of the most eminent writers, the subjects on which they wrote, the nation to which they belonged, and the age in which they lived); *Essai d'Annales de la Vie de Jean Guttenberg, Inventeur de la Typographie.* The study of the German language of the middle ages occupied his attention also, and induced him to give an edition of J. G. Scherzii, *Glossarium Germanicum Medii Ævi, potissimum Dialecti Suevicæ,* (2 vols., folio). He also produced the first sketch of the statistics of the former Alsace, having published, from 1782, for the space of ten years, the Alsatian Almanac and the *Alsatia Literata,* for which Schoepflin furnished him with materials. The two first volumes appeared in 1782 and 1786.

OBESITY. See *Corpulence.*

OBJECT, in grammar and philosophy, is opposed to *subject,* which, in philosophy, designates the being who conceives, thinks, or knows the object. The subject is the conceiving, thinking, knowing; the object, the conceived, thought, known. Every subject may become an object. If A thinks or conceives the thing O, A is the subject, O is the object; but if I conceive A thinking of O, both are the object, and I the subject. *Objective,* therefore, is used in modern philosophy, particularly by the Germans, for that which truly belongs to an object; *subjective,* for the manner in which an object is conceived of by an individual subject. In the same way, *objectivity* is used to denote the existence of things without us, independently of our ideas of them. It is well known that some philosophers deny this objectivity. There is a great difference between an objective and a subjective knowledge or representation of a thing: the former is the knowledge or representation of the thing as it really is, independently of the impression which it makes upon the individual character of the subject; the latter is limited to this. He who describes objectively, shows us the things as they are, free from the bias of his own partialities and prejudices, springing from his education and habitual associations. Such a spirit should be the great aim of an historian. Some works, particularly in belles-lettres, however, derive their great charm from their subjectivity; i. e. from giving us only the impression made upon the narrator, if he be an individual of a peculiar character, describing things with which we are already acquainted. But the great question arises, What is objective truth? All knowledge has been attained by individuals, and takes its character from the impressions made by the object upon the subject; hence all truth is subjective. Still we may say, that what appears to all reasoning subjects, almost without exception, as right and true, has the value of objectivity. But, as we find on no subject, not even the fact of man's existence, a perfect concurrence of opinion, it is obvious that objective truth cannot be fully obtained. "Here we see through a glass darkly, but there face to face;" i. e. we shall attain to objective truth, and know things as they are. In the fine arts, it is of the first importance that the artist should be objective, i. e. represent things and ideas free from partial, contracted conceptions. On the other hand, his subjectivity is not to be lost in the objectivity of his work; on the contrary, the work should bear the impression of his individual character, but its individuality must be beautiful. We know not a more opposite example of such a character than Shakspeare. Who represents things, men, virtues, and vices, more objectively, impartially depicting even vices and crimes with perfect calmness? and whose works, on the other hand, bear more the impress of unequalled genius and individuality than his? The other extreme is the works of young poets, who torment their readers by the constant protrusion of their own partial views.

OBJECT-GLASS, in optical instruments, is that which is placed towards the object: the other extreme lens is the *eye-glass,* being that to which the eye is directed.

OBJECTIVE. See *Object.*

OBLATE (flattened or shortened); having its axis shorter than its middle diameter, being formed by the rotation of an ellipse about the shorter axis. The earth is an oblate spheroid, the polar diameter being shorter than the equatorial diameter in the proportion of 331 to 332; i. e. the polar diameter is 7900 miles, and the equatorial diameter 7924 miles.

OBLATI; lay-brothers. See *Orders, Spiritual.*

OBLIGATION. The name of *obligations* is sometimes given to public stocks, because the government promises to pay under such and such circumstances.

OBLIGATO (*Italian,* required), in music, is used of those voices or instruments which are indispensable to the just performance of a piece. An instrument may be *obligato* throughout a piece, when it is called a *concerto* for such an instrument; or an instrument may become now and then *obligato,* when these passages are called *obligato* or *solo* passages. All instruments can be used *obligato,* except, perhaps, the double bass: this is excepted partly because solo players are very rare on this instrument, partly because the solo voice would be too deep for being duly supported by other instruments; it is, there fore used more properly for the basis of harmony. There are some musicians, however, who play solos on the double bass.

OBOLUS; a Grecian coin of silver or copper, the sixth part of a drachm, about 10⅘ pence in value. In early times, instead of money were used little pointed pieces of iron, or of copper (ὀβολος, ὀβελος, a spit). Six of these filled the hand, and made a drachm. The same name was afterwards given to a small silver coin. The Greeks placed an obolus in the mouth of the dead, to pay Charon for their passage over the Styx. In weight, the obolus is likewise the sixth part of a drachm; the latter coin, however, is not always of the same value.

OBOTRITES; a Vandal tribe. See *Vandals.*

OBSCURANTISM (from Latin *obscurare*); a word not unaptly used in Germany to denote the endeavours of certain men to prevent the diffusion of intelligence. It is used in science as well as in religion, and might very properly be applied in politics.

OBSERVANTS. See *Franciscans.*

OBSERVATORY; a building constructed for astronomical observations, from which there is an unobstructed view of the heavens, and in which the instruments are safe from agitation and other disturbances. There are, for instance, large astronomical telescopes, always placed in the direction of the meridian, and the internal arrangement of the building is such as to facilitate the observations; the roof is also flat, to favour the view to the horizon. The instruments in an observatory are quadrants, sextants, and octants, transit, equatorial, parallactic, and circular instruments, achromatic and reflecting telescopes, night and day telescopes, chronometers, compasses, &c. We find mention of observatories at a very early period: Diodorus (ii. 9) tells us of a tower, from which the Chaldæan astronomers made their observations, in the temple of Belus, at Babylon. Copernicus was the first who (1540) set an instrument in the meridian. The first regular observatory was erected at Cassel in 1561. Among the modern European observatories, the most celebrated are those of Paris (erected in the reign of Louis XIV., 1664—72), of Greenwich (built in 1672), and of Palermo (erected by Piazzi, 1789). That on the Seeberge, near Gotha, has acquired celebrity through Zach (q. v.), and that of Konigsberg through Bessel; of the latter Bessel has given an account in his *Beobachtungen auf der Universit-Sternwarte* (1814 seq.). There are also similar establishments at Amsterdam, in Batavia, at Berlin, Bologna, Breslau, Cambridge, Cape-town, Dublin, Edinburgh, Florence, Genoa, Gottingen, Hamburg, Copenhagen, Leipsic, Leyden, Lilienthal (near Bremen), Lisbon, Milan, Manheim, Marseilles, Moscow, Munich, Naples, Nicolaieff, Oxford, Padua, Petersburg, Pisa, Plymouth, Portsmouth, Prague, Rome, Slough (Herschel's), Stockholm, Toulouse, Upsal, Vienna, &c. China is indebted to the Jesuits for one at Pekin, erected towards the end of the seventeenth century; and another has been built at Paramatta, in New South Wales. Although observatories are generally provided with numerous and costly instruments, yet for most purposes, a meridian circle of two, or at most three feet diameter, a four or five feet telescope, and a good clock, are sufficient.

OBSIDIAN. See *Pitchstone.*

OCANNA. See *Colombia.*

OCCAM or OCKHAM, WILLIAM, an eminent philosopher of the fourteenth century, a native of Ockham in Surrey, was educated at Merton college, Oxford. He studied under the celebrated Duns Scotus, whose opinions he, notwithstanding, controverted, becoming the founder of the philosophical sect of the Nominalists, as Scotus was of the Realists. Occam entered into the Franciscan order of Friars Minor, or Cordeliers; and he also took orders in the church, and became archdeacon of Stowe, in the diocese of Lincoln, which preferment he resigned about 1320. He wrote against pope John XXII., whom he treated as a heretic, and joined the anti-pope Nicholas V., set up by the emperor Louis of Bavaria. He died at Munich in 1347. He was well acquainted with the Scriptures, and with the philosophy of Aristotle, and possessed a subtle genius and much eloquence. Among his works are *Commentarium super Sententias* (lib. iv.); *Quodlibeta; De Ingressu Scientiarum;* and a treatise against the pope, *De Paupertate Christi et Apostolorum.* He obtained the title among the schoolmen, of the *Invincible Doctor.* See *Nominalists* and *Scholastics.*

OCCASIONAL CAUSES. The doctrine of occasional causes was developed in the school of Descartes. Before him it was considered that the body influences the soul, and causes motions in it, and *vice versa.* This was called *systema influxus physici.* Descartes impugned this indirectly by his dualism, which he reconciled by making God the cause of all motion. Louis de la Forge, his scholar, also makes God the cause of all motion, but considers a mutual connexion to exist between soul and body, so that the one is never moved by God without influencing the other. Geulin developed the system further, and made God the original cause of every motion produced by one of the two parts on the other.

OCCIDENT; a word much used in the historical works of the European continent, in contradistinction to *Orient;* for instance, *Occidental* languages, *Occidental* empire. See *Western Empire.*

Occident, in astronomy and geography, is the same as *westward,* or point of the horizon where the sun sets. A planet is said to be *occident* when it sets after the sun.

OCCULTATION; the obscuration of a planet or star by the interposition of the moon, or other planet, between it and our eye. The name of *immersion* is given to the state of a star or planet, when it is so near the sun as to be invisible; also to that of the moon when she begins to be darkened by entering into the shadow of the earth.

OCCUPANCY, in law. See *Land, Property in; Natural Law,* and *Public Lands.*

OCEAN; the great mass of waters which surrounds the land, and which probably extends from pole to pole, covering nearly three quarters of the globe. For the sake of convenience, we distinguish different parts of it under the names of *seas, bays, gulfs, sounds,* and even give the name of *ocean* to large portions which are partially divided from each other by the continents. But these divisions are arbitrary. The following classification, adopted by Malte-Brun, in his System of Geography, has, at least, the advantage of showing, in a striking manner, the connexion which exists between the great masses of water.

A. Great Austro-Oriental or South-Eastern Basin.	1. Austral ocean, or Southern Frozen ocean (Antarctic ocean).	Its limits are a line drawn from cape Horn to the cape of Good Hope, by Van Diemen's Land, and the south of New Zealand, back to cape Horn.
	2. Oriental, or Pacific ocean.	*a.* The Great Archipelago (*Oceanica*), comprised between the Austral ocean, the Marquesas, the straits of Malacca, and the latitude of Formosa. *b.* The Northern Oriental Ocean, between Asia and North America. *c.* Southern Oriental ocean, between the Great Archipelago and South America.
	3. Indian ocean.	
B. The Western Basin, forming a sort of channel between the two continents.	4. Western ocean.	*a.* Northern ocean, or Frozen ocean (Arctic ocean). *b.* Atlantic ocean, lying between Europe and North America, and extending south to the nearest points of Brazil and Guinea. *c.* The Ethiopic ocean, between the Atlantic and Austral oceans.

It has been calculated that the land of the northern hemisphere is to the sea of the same as 419 to 1000; in the southern hemisphere, the proportion is as 129 to 1000. To account for this great disproportion, it has been conjectured that there is a great southern continent surrounding the south pole; but the voyages of navigators have not revealed the existence of such an extent of land. The bed of the ocean presents the same irregularities of aspect as the surface of the land. It is diversified by rocks, mountains, plains, and deep valleys. In some places it has been found impossible to reach the bottom; but the notion that it is any where without a bottom is incompatible with the spherical figure of the earth. The mean depth of the ocean has been shown, by Laplace, to be about the same as the mean height of the continents and islands above its surface, which does not much exceed 3000 feet. This distance is but a small fraction of the excess of the equatorial over the polar radius, which is about 60,000 feet. The greatest depth that has ever been sounded is 7200 feet (by Scoresby, in 1819). But it is probable that there are deep cavities or valleys in the bed of the ocean corresponding to the elevation of the mountains on the surface of the earth.

Sea-water is well known to contain foreign substances mixed with it; its saltness and bitterness give it an extremely disagreeable taste. Its specific gravity varies from 1·0269 to 1·0285. The degree of saltness differs according to different localities; but the difference is not very great. In 100 parts of sea-water the greatest proportion of salt is 3·77, and the smallest 3·48. The experiments of Sparmann go to show that the water of the surface, while it is less salt than that at a considerable depth, is much more bitter. Gulfs or inland seas, such as the Baltic, are less salt than the main ocean, on account of the quantity of fresh water poured in by rivers. The polar seas are less salt than the equatorial, owing to the low temperature of the former, which disposes them to deposit the saline substances. Naturalists have endeavoured to account for the saltness of the sea; some have supposed it to be caused by primitive banks of salt at the bottom; but if such banks exist, they have probably been formed by deposits from the water, rather than been the cause of its saltness; others have ascribed it to the corruption of vegetable and animal matter conveyed to the sea by rivers; but if this is true, the saltness would be increasing. Some have conceived the ocean to be the residue of a primitive fluid, which held in solution all the substances of which the earth is composed, and on depositing the others, retained the saline principles which it still contains. The only method of freeing sea-water from its salt is by distillation; and the process is so slow, that it can rarely be applied to any practical purpose. Even after distillation it retains its bitter taste. This bitterness, which renders sea-water so nauseous, probably proceeds from animal and vegetable matter in a state of decomposition. The most common ingredients found in it are muriatic acid, sulphuric acid, soda, lime, and magnesia. These substances in combination may form six salts; but it is not probable that all of these latter actually exist at the same time. They are muriate of soda, or common salt, muriate of magnesia, or Epsom salt, sulphate of soda (Glauber's salt), &c. The saltness of the sea-water does not preserve it from corruption, as is shown by the water in a ship's hold, and sometimes even in the equatorial seas after a long calm. Many substances are corrupted more rapidly by being plunged into it; and its odour, when corrupted, is extremely offensive. It is preserved pure by its constant motion.

The general colour of the sea, in the open ocean, is a deep greenish-blue; the blue tint, which is predominant, seems to proceed from the same cause as the colour of the sky; the blue rays being reflected in the greatest quantity on account of their superior refrangibility. The other shades, which have sometimes been observed in different seas, seem to be owing to local causes, and often, perhaps, to optical illusions. In approaching soundings, the water assumes a lighter shade. The luminous appearance of the sea by night is an imposing and magnificent phenomenon. It has been ascribed by some to animals of the zoophyte and mollusca classes, which are said to possess phosphorescent qualities; some attribute it to the phosphorescence of decaying animal and vegetable substances; others to the spawn of fish. Some have explained it to be the effect of friction. But the appearances are extremely different at different times, and all these causes probably operate to produce them.

Observations made on the temperature of the sea, show that the sun's rays rarely penetrate below the depth of forty-five, or, according to some, of 113 fathoms, below which the sea receives no light, and consequently little or no direct heat from the sun; and that the temperature increases with the depth to a certain degree, but never to freezing. The constant motion of the sea contributes, in some measure, to render its temperature equable. (See *Ice.*) "We must distinguish," says Humboldt, "four different phenomena with respect to the ocean;—the temperature of the water at the surface in different latitudes; the decrease of temperature in the lower strata; the effect of waves on the temperature of the surface; and the temperature of currents. The region of warmest water is between 5° 45′ N., and 6° 15′ S. lat.; and different observations give from 82 to 84 as the maximum. In the parallel of warmest waters the temperature of the surface of the sea is from 3° to 5° higher than that of the superincumbent air." The observations of Humboldt also show that both in the Atlantic and Pacific, in changing the latitude and longitude, the waters often retain nearly the same temperature over a great extent, and that between 27° N. and 27° S. lat., the temperature of the sea is entirely independent of the changes in the atmosphere. From the equator to 25° or 28° N. there is a remarkable constancy of temperature, but in higher latitudes there is more change. See *Temperature.*

The great periodical oscillations of the sea, caused by the attraction of the sun and moon, are treated of in the article *Tides;* the particular movements, which prevail in different parts of the ocean, and set in different directions, are described in the article *Currents.* See also *Winds.*

In some places springs of fresh water are observed to issue from the sea, entirely unaffected by the salt water. The most remarkable of these phenomena are in the gulf of Spezia, in the Persian gulf, and in the bay of Xagua, on the south coast of Cuba. It is probable that these are subterraneous streams, which find their way under the bed of the ocean, until they encounter a fissure, into which they are impelled in the same manner as spouting springs on land.

A variety of plants are nourished by the ocean, to which are given the general denomination of *fuci,* and which are vulgarly known by the names of *sea-weed* and *rock-weed.* Some species adhere to the bottom, while others rise to the surface even from a depth of sixty fathoms. In the North Atlantic there is a space extending between lat. 20 and 40° N., and lon. 20° and 45° W., which is at all seasons covered with a species of weed (*fucus natans*) of a beautiful green colour, whence the Dutch navigators called this tract *Kroos Zee,* Duck-weed sea. (See

Fuci.) The great divisions of the sea appear to be inhabited by their peculiar fish, mollusca, zoophytes, &c., and to be frequented by peculiar species of birds.

The level of the seas is, generally speaking, everywhere the same. This arises from the equal pressure, in every direction, which the particles of a fluid exercise upon each other. The ocean, therefore, considered as a whole, has a spherical or a spheroidal surface, which may be considered as the true surface of our planet. Exceptions to this general rule are often, however, to be found in gulfs and land-locked bays, where the waters become accumulated, and stand higher than in the open ocean. See *Islands;* see also *Atlantic*, *Pacific*, and *Indian ocean.*

OCEANICA (in Malte-Brun's Geographical System); the third great division of the world, comprising all the islands which lie to the south and south-east of Asia in the Pacific ocean, including the Asiatic archipelago, Australia, and Polynesia. The former constitute North-west Oceanica; New Holland, and the large islands lying round it, Central Oceanica; while the remaining islands, forming what is usually called *Polynesia,* constitute Eastern Oceanica.

OCEANIDES; the three thousand daughters of Oceanus and Tethys. We include, under this name, according to the hymns of Orpheus, the whole female posterity of Oceanus, that is, all the goddesses of the streams and fountains flowing beneath the earth from the surrounding ocean; only excepting from the number the Nereids, or nymphs of the Mediterranean sea, although they also, being descended from Doris, one of the Oceanides, have been called by Antipater of Sidon, *daughters of the Ocean.*

OCEANUS; the eldest of the Titans, whose birth is connected with the origin of the sea (*Pontus*). He was born later than Pontus, and surrounded the earth, the vault of heaven sinking towards him on every side. He has therefore been called the son of Gæa (the earth) and of Uranus (heaven.) Oceanus and Tethys were the parents of rivers, and of the race of goddesses called *Oceanides.* According to another account (see Homer's *Iliad*, book xiv. 201, 246,) he was the father of all gods and men. He always appears as a peaceful god, and he took no share in the mutilation of Saturn. He was not, therefore, cast into Tartarus with the Titans. On account of his circumspection and mildness, he was called the *father of wisdom.*

OCHRE. See *Clay.*

OCHTERLONY, Sir David, Bart., major-general in the British East India company's service, was born in Boston, New England, in 1758. At the age of eighteen, he went to India as a cadet, and in 1778 was appointed ensign, and in September of the same year lieutenant on the Bengal establishment. Lieutenant Ochterlony rose by merit through the intervening ranks, and, in 1803, was made lieutenant-colonel. In the Mahratta war of 1803—4, he distinguished himself on several occasions, and, after the great battle of Delhi, was appointed resident at that court. On the restoration of peace, he received the command of the fortress of Allahabad, and, in 1809, commanded a force stationed on the Sutledge, to overawe the Seiks. In 1812, he was promoted to the rank of colonel, and, in 1814, to that of major-general. In the Nepaulese war he commanded a division which was instructed to advance, through a difficult country, against Umer Sing, a brave and experienced warrior, whom he compelled to surrender in the almost inaccessible fortress of Mallown. The chief command was now given to general Ochterlony, who brought the war to a close, September, 1815, after a series of skilful operations and brilliant successes. His services were rewarded, by the prince regent, with the order of knight-commander of the Bath, and the dignity of baronet, and by the East India company with a pension of £1000 per annum. In 1816, Sir David Ochterlony was created knight grand cross of the order of the Bath, and, in 1817, the thanks of the two houses of parliament were voted him for his skill, valour, and perseverance in the Nepaulese war. In 1817, he was invested with large powers for settling the province of Rajpootana. In 1818, he was appointed resident at Delhi, with the command of the third division of the grand army, and, in 1822, was intrusted with the superintendence of the affairs of Central India, as resident and political agent in Malwah and Rajpootana. He died in 1825.

OCRACOKE INLET; an inlet of North Carolina, forming a passage into Pamlico sound; twenty-two miles south-west of cape Hatteras; lon. 75° 59′ W.; lat. 34° 55′ N. On each side of the channel are dangerous shoals; on the bar are fourteen feet at low water.

OCTAGON, in geometry, is a figure of eight sides and angles, which, when the sides and angles are all equal, is called a *regular octagon*, and when they are not equal, an *irregular octagon.*

OCTAHEDRON or OCTAEDRON; a body consisting of eight equal and equilateral triangles.

OCTANT, an astronomical instrument, is the eighth part of a circle, divided into degrees, and used in calculating the amplitude of the stars, but is now little used.

OCTAVE, in the diatonic system of musical sounds; the eighth sound from an assumed fundamental tone. It belongs to the perfect concordant intervals, so that when it is sounded with the fundamental, the ear scarcely perceives more than one sound, and is hardly able to distinguish the one from the other. For this reason, the octave must, in our musical scale, be perfect; whereas the other intervals may be tuned somewhat higher or lower than their true pitch. The upper octave, that is, the one which is eight notes above the fundamental, is obtained when the string which sounds it is only one half as long, and the lower octave when this string is twice as long, as that of the fundamental. The string which sounds the upper octave in each makes two vibrations, while the string of the fundamental makes one. Therefore on the eighth diatonic string the tone of the first, or lowest, recurs. The ninth string repeats the second tone, called the *second,* the tenth string the third tone, or the *third*, &c. According to the arrangement of our new or diatonic system of tones, the octave is therefore the limit within which the seven essential tones are kept distinct from each other; and all tones without the limit of the octave are only repetitions, in an augmented or diminished degree, of the tones already contained in the compass of the octave. For this reason we call the octave the whole extent of the tones of the diatonic system. (See *Tablature.*) The number of upper and lower octaves, or the manner in which several octaves of different heights are to be chiefly distinguished, is not absolutely determined, on account of the continually increasing compass of instruments, particularly stringed instruments, and especially the piano forte, which, within a short period, has been increased a whole octave. The octave, considered as an interval, has, of all intervals, the least harmonic effect. On this account composers, when there is only one principal voice, forbid rising to the octave except at the beginning or close. But a succession of octaves following each other, when a melody is to be raised in that manner, has a very good effect. False or disallowed octaves are, in musical compositions for many voices, progressions of two voices in exact movement by octaves, which offend the ear. The reason why such progressions by octaves are disallowed in a musical piece for many voices, is evident, because, when two voices proceed by octaves, no difference can be perceived between these two; and, for example, a piece for four voices, becomes one for two. There are also those which are called *covered octaves*, that is, such as become for the first-time distinguishable when the interval of the two voices, proceeding in an exact movement by octaves, is filled up with unimportant notes. Of the compositions for two voices, or in the two upper parts of composition for three or four voices, those alone are free from fault in which the upper part rises or falls a second, but the fundamental a fourth or fifth. The use of the others is only allowed under the middle part, or between an upper and a middle part. *Octave*, also, in an organ, signifies the open flute stop, which is one or two octaves higher than the principal.

OCTAVIA; daughter of Caius Octavius and of Accia, and sister to the emperor Augustus. All the historians praise the beauty and the noble character of this celebrated Roman lady. After the death of her first husband, Marcus Marcellus, she married the triumvir Marcus Antonius, that she might confirm the friendship existing between him and her brother. But Antony was incapable of duly estimating her virtues; and the charms of Cleopatra, which inflamed his passions, he preferred to the modest beauty of his wife. After her marriage, she followed her husband to Athens, where she passed the winter (B. C. 39) with him, averse from those luxurious pleasures to which he abandoned himself. Without her interposition, civil war would even then have broken out between Octavius and Antony. By urgent prayers she appeased her husband, who was incensed against her brother for his suspicions, and then, disregarding the difficulties of the journey and her own pregnancy, she went, with his consent, from Greece to Rome, and induced her brother to consent to an interview with Antony, and to come to a reconciliation with him. When her husband went to make war against the Parthians, she accompanied him to Corcyra, and at his order returned thence to remain with her brother. New quarrels arose between Octavius and Antony. To have a pretext for a rupture, Octavius ordered his sister to go to her husband, in the expectation that he would send her back. This actually happened. Antony was leading a life of pleasure with Cleopatra at Leucopolis, when letters from Octavia at Athens informed him that she would soon join him with money and troops. The prospect of this visit was so unwelcome to Cleopatra, that she persisted in her entreaties till Antony sent his wife an order to return. Even now she endeavoured to pacify the rivals. Octavius commanded her to leave the house of a husband who had treated her so insultingly; but feeling her duties as a wife and a Roman, she begged him not, for the sake of a single woman, to destroy the peace of the world, and of two persons so dear to her, by the horrors of war. Octavius granted her wish; she remained in the house of Antony, and occupied herself in educating with care and tenderness the children which she had borne him, and those of his first wife, Fulvia. This noble behaviour in Octavia increased the indignation of the Romans against her husband. At last he divorced her, and ordered her to leave his house. She obeyed without complaint, and took with her all her children, except her eldest son, Antillus, who was with his father. Soon after, she witnessed the outbreak of the civil war. She died in the year of Rome 742, twelve years before the Christian era. Augustus pronounced her funeral oration, but refused the marks of honour which the senate were desirous of bestowing on her.

OCTAVIUS, or OCTAVIANUS. See *Augustus*.

OCTOBER (from the Latin *octo*, eight); originally the eighth month in the Roman calendar, whence its name, which it still retained after the beginning of the year had been changed from March to January.

OCTROI or OCTROY, an old French term (from *auctoritas*) signifying a grant or privilege from government, is particularly applied to the commercial privileges granted to a person or to a company. In a like sense the term is applied to the constitution of a state granted by a prince, in contradistinction to those which are derived from a compact between the ruler and the representatives of the people.

Octroi also signifies a tax levied at the gates of some cities in France upon all articles of food.

OCZACOW (*Otschakow*); called by the Turks *Dzain Krimenda*; a town in the Russian government of Cherson, with about 1000 inhabitants, situated on the Black sea, at the mouth of the Dnieper; lat. 46° 36′ N.; lon. 41° 30′ E. It was formerly an important Turkish fortress, with a citadel, the walls of which were twenty-five feet high. In 1737, it was stormed by the Russians, who lost 18,000 men in the attack. The Turks attempted to recover it with a force of 70,000 men, but were repulsed with the loss of 20,000. In 1738, it was given up by the Russians, who had previously destroyed the works. The Turks fortified it anew in 1743, and held it until 1788, when, after a siege of six months, it was stormed by Suwaroff, who razed it to the ground. By the peace of 1791, it was ceded to Russia; but since the rise of Odessa its commerce has become inconsiderable.

ODAHLIC; the name given to the females confined in the harems of the Turkish sultan. See *Harem*.

ODE; a poem of purely lyrical character, or of that class of lyrical compositions which express the feelings of the poet in moments of high excitement, with the vividness which present emotion inspires. (See *Lyrics*.) The Greeks called every lyrical poem adapted to singing, and hence opposed to the elegiac poem, an *ode* (ᾠδὴ, i. e. *song*), from which they did not even separate what the moderns call *songs*. We are acquainted with the Greek odes through the choruses in the Greek dramas, Pindar's heroic odes in praise of the conquerors at the great national games, the few relics of the amatory songs of Sappho, Alcæus and others, the Anacreontic songs, the imitations of the Greek odes by the Romans, particularly Horace, and through the scholia. Whatever was the subject, or the degree of feeling or excitement, every poem was termed an *ode*, provided it was purely lyrical. The name of *odes* was also given to the hymns or praises of the gods (the Homeric hymns excepted, because they are of an epic character), which received different names from the various deities to whom they were addressed; thus dithyrambics were originally hymns in praise of Bacchus. The odes of the ancients are distinguished from the lyrical poems of the moderns, by expressing feeling, according to the prevailing character of antiquity, more by the aid of imagery. The *plastic*, or the clothing of inward conceptions in outward forms, is a chief trait of the Greek art; and, in the same manner, the feeling of the poet expressed itself in a series of striking images. In modern times, odes have been more confined to the simple utterance of feeling; and so far has this been carried, that they have sometimes been divested of all poetic conception. But a naked expression of feelings does not make a poem; and this is the defect of many of Klopstock's odes. In modern times, the ode has been separated from the song, so that *ode* now means that part of lyrical poetry which expresses the deep emotions of the soul, and the alternation of violent and elevated feelings of joy or suffering, in the full flow of inspiration.

Odes have been classified according to their subjects. The religious ode, or the hymn, in its proper meaning (see *Hymn*), has for its subjects God and his works. To this class belong several psalms, likewise the song of Moses and Deborah; among the Greek odes, some of Pindar's, the Hymn of Cleanthes, and many choruses in the Greek drama; some odes of Horace, for instance, the *carmen seculare*, though it has more polish than elevation; the hymns of Rousseau, Gray, Akenside, Thomson, Cowley and Prior, Klopstock, Herder, and others among the moderns. The dithyrambic (q. v.) has the full flow of sensual feeling for its subject. The heroic ode celebrates heroes or sons of gods, princes, victory, greatness of mind, &c. Most of Pindar's odes are of this sort, as are also some of Dryden's, Pope's, Gleim's, Schiller's, Goethe's. Of the didactic ode, the (so called) *philosophical* and *satirical* are subdivisions. The name of *didactic* is given to the ode as far as it deals with great, instructive and inspiring truths. If it utters noble feelings without immediate reference to the present time, it is called *philosophical;* if it censures the times, as Horace does, it is termed *satirical.* Further, the ode may celebrate certain particular subjects; and here it loses itself in the unlimited field of occasional poems.

No species of poetry has been so much abused as the ode, as it has been made the common form for the praise of persons and things; and this, says Bouterweck, is probably the reason, why the literature of all nations is so poor in odes deserving this name. Most of the Italian odes are very bombastic. Chiabrera is one of the most distinguished Italian writers of odes. The Spanish have Garcilaso de la Vega, Quevedo, Gongora, &c.; but the Spanish ode is very similar to the Italian. The British mostly adopt a strong didactic tone in their odes. The French are exceedingly declamatory; their pointed language is not suited for the ode. Rousseau, L. Racine, Gresset, Chenier, and Lebrun are some of their finest writers in this department. The Germans sometimes lose themselves in unintelligible mysticism, sometimes run into mere relation, not poetical expression of feelings. Some of their odes, however, are truly grand; for instance, Schubart's dithyrambic on Frederic the Great. Some odes of Flemming, Haller, Hagedorn, Uz, Lavater, Ramler, Voss, Kosegarten, Herder, Schiller, are among the first in the language.

ODENWALD; a forest and chain of mountains in Western Germany, between the Neckar and the Maine, in the grand-duchies of Hesse-Darmstadt and Baden. The Neckar divides the Odenwald from the Black Forest. The Odenwald is about twenty leagues long, and presents charming scenes.

ODEON (ὠδεῖον, from ὠδὴ, a song); among the Greeks, and, at a later period, among the Romans, a public building devoted to poetical and musical contests. The first odeon was built at Athens by Pericles, and was afterwards used for popular meetings and the holding of courts. At a later period, two others were erected by Pausanias and Herodes Atticus, and other Greek cities followed their example. The first odeon was built at Rome in the time of the emperors. Domitian erected one, and Trajan another. The Romans likewise constructed them in the provincial cities, and the ruins of one are still seen at Catanea in Sicily. The odeons resembled other theatres, except that they were inferior in extent, and were covered with a roof. This name has been given to one of the theatres in Paris, rebuilt, after having been destroyed by fire, in 1818.

ODER (*Viadrus,*) a river of Germany, which rises in Moravia, in a branch of the Sudetic mountains, flows through Silesia, becomes navigable for small boats at Ratibor, passes by Breslau, where it becomes navigable for barges of forty to fifty tons, enters Brandenburg and Pomerania, and empties into the Baltic. Its whole course is about 500 miles: it receives several navigable streams, and communicates with the Elbe by several canals, and is of very great importance for the trade of the country. The principal places on the Oder are Breslau, Frankfort, and Stettin. In the upper part of its course it is rapid, but in the flat country it is subject to frequent inundations. Before reaching the sea, it forms the large maritime lake called the *Stettin Haff,* and divides into three branches—the Peene, Swine, and Divenow. Since 1818 the Prussian government has constructed works for the improvement of the harbour of Swinemunde, the port of Stettin.

ODESSA; a Russian seaport in the government of Cherson, situated on the Black sea, between the mouth of the Dnieper and Dniester, on the bay of Adsehai; lat. 46° 29′ N.; lon. 30° 37′ E. This place, which is now of considerable size (40,000 inhabitants,) and is rapidly increasing, is of modern origin. After the cession of Bessarabia, by the peace of Jassy, in 1792, Catharine fixed on this spot, then containing only a few houses, as a commercial emporium. It has a sufficient depth of water for the largest ships of war. Alexander carried into execution the designs of Catharine, and appointed Richelieu (q. v.,) who was then a French emigrant, and has since been prime minister, governor of the city. It is built in the form of an oblong square, and fortified in the modern style. The port, which is artificial, is capable of receiving 300 vessels. The roadstead is extensive, and the anchorage is safe in summer, being sheltered from every wind except the south-east. The streets are straight, wide, and cross each other at right angles; there are some fine walks, and numerous public buildings. Water was scarce, but has been supplied by aqueducts. There are many institutions for education here. The commerce of Odessa has become extensive. In 1826, 578 ships entered the port. The chief articles of export are grain, timber, hides, furs, flax, linen, wax, tar, potash, caviar, &c. About one-third of the commerce is in the hands of the British. Greeks, Italians, French, Poles, Armenians, and Germans, are among the inhabitants. Government has endeavoured to induce settlers from Germany to occupy the lands in the neighbourhood of Odessa, by granting them certain privileges. Bulgarian and Russian peasants are also numerous.

ODIN. See *Northern Mythology.*

ODOUR. See *Smell.*

ODYSSEUS. See *Ulysses.*

ODYSSEY. See *Homer.*

OE; an affix to many Danish geographical names, signifying *island.*

ŒCOLAMPADIUS, John, was born of a Swiss family at Weinsberg, in Suabia, in 1482, and, according to the custom of that time, adopted the name by which he is generally known, as the Greek of his proper name, *Hausschein* (House-light.) In the twelfth year of his age he entered the university of Heidelberg, whence his father sent him to Bologna to study law. He soon after returned to Heidelberg, applied himself to theology, and became the incumbent of a benefice which had been instituted by his ancestors. Sensible of the limited nature of his acquirements, he went to Tubingen and afterwards to

Stuttgard, where Reuchlin was professor, and there studied Greek, and subsequently Hebrew. His progress was such that he compiled a Greek Grammar. He then returned to Weinsberg, and distinguished himself by his zeal as a preacher. By his friend Capito's influence, he was invited to Basle in 1515, and there became acquainted with Erasmus, and, in conjunction with him, wrote a commentary on the New Testament. In 1516 he received a call at Augsburg, but soon after determined to enter the monastery of Altomunster in the neighbourhood. Luther's writings, however, awakened him to more liberal views, and before he had been two years in the monastery, he left it, and became preacher at the castle of Ebernburg, to Francis of Sickingen. In 1523 he became professor of theology and curate at Basle. He defended the doctrines of the reformation in several theological disputations and conferences, particularly in Basle and Berne, and introduced them into the former place (1527 and 1528.) His conduct in the controversy concerning the Lord's Supper was worthy of all praise. In his treatise *De genuina Verborum Domini, "Hoc est Corpus meum," Interpretatione*, he displayed a rare moderation, maintaining the body to be only symbolical. The defenders of the real presence attacked him with great violence, and applied to him and his followers the reproachful epithet of Sacramentarians. Œcolampadius answered with calmness and dignity. He died at Basle in 1531. His Life has been written by Hess (Zürich, 1793.)

ŒCUMENICAL COUNCIL. See *Council.*

ŒDIPUS; son of the Thracian king Laius and Jocasta. (See *Jocasta.*) An oracle had announced to Laius that his child by Jocasta should be his murderer. When, therefore, a son was born to him, he ordered a slave to bore his heels and expose him on mount Cithæron. But the slave gave the child to a shepherd of the Corinthian king Polybus, and the shepherd carried him to the king, whose wife, Merope, being without children, received him, and called him *Œdipus*, from his swollen feet. Ignorant of his birth, the child grew up at the Corinthian court, with all the qualities of a hero. But, an angry youth having one day reproached him with not being the son of the king, he became a prey to tormenting doubts. His foster parents, whom he questioned, referred him to the Delphian oracle, which gave him this answer—"Avoid the soil of thy country, or thou wilt be the murderer of thy father, and the husband of thy mother." As he looked upon Corinth as his country, he left it, and travelled to Thebes, in Bœotia. In a narrow road in Phocis he met king Laius, who was going to Delphi to consult the oracle with regard to the son whom he had exposed; and the king's charioteer haughtily ordered him to get out of the way. Œdipus refused to obey; a struggle ensued, and both king and charioteer fell under his sword. Thus he had unconsciously fulfilled one half of the oracle. Ignorant of this, he pursued his way. The territory of Thebes was at that time desolated by the Sphinx (see *Sphinx*), which proposed a riddle, and put to death every one who attempted, without success, to solve it. No one had yet succeeded. In this extremity the vacant throne and the hand of the queen were offered to the deliverer of Thebes. Œdipus comes forward, solves the enigma, delivers the city, and receives the prize. The oracle was thus fulfilled. Thebes now honoured within her walls the murderer of Laius, when a pestilence fell upon the land, from which the oracle promised deliverance, as soon as he was removed who had called down this curse. The affrighted people again have recourse to their former benefactor, and he, unconscious that he is himself the criminal, strives with restless zeal to discover him. He draws from the prophet Tiresias the unhappy secret, and makes the horrible discovery that he is the murderer of his father, and the husband of his mother. Cursing the bed in which she had borne a husband to her husband, and a son to her son, the unhappy Jocasta hanged herself. Œdipus put out his own eyes to extinguish the sight of all which could remind him of his guilt. He begged the Thebans to banish him. At a later period, when he wished to die in Thebes, he was driven away by his ambitious sons Eteocles and Polynices. In his anger, he cursed them, and threatened that the sword should divide their inheritance. His two daughters, Antigone and Ismene, followed their blind and exiled father. Led by the former, he reaches the village of Colonos, in Attica, where Theseus reigned, and dwells in the grove of the Eumenides, which no mortal foot dared approach. He conciliates the favour of the terrible goddesses. The people and Theseus took him under their protection. In the meanwhile the oracle of Pythian Apollo had declared that the land which should ignorantly conceal his ashes would be fortunate and invincible. The inhabitants of Thebes now endeavoured to draw him back. Impelled by the presentiment of approaching death, he sought his grave accompanied by Theseus alone. The gods were reconciled to him. His death was the death of suffering innocence. The ancients have disagreed with regard to his burial-place. The history of Œdipus has furnished a subject to several tragic poets. The Œdipus of Æschylus and that of Euripides are lost. Of Sophocles two pieces treating of his fate remain—King Œdipus and Œdipus at Colonos. Seneca has also written a piece on the same subject.

ŒLS, a mediatized principality in Lower Silesia, belonging to the Prussian government of Breslau, contains 800 square miles and 91,000 inhabitants, and affords 175,000 florins annual revenue. The capital is Œls, where the ducal officers of government, &c., reside. In 1789, the duchy passed to the house of Brunswick, and was under the government of duke Frederic William, who fell, in 1815, at Quatre Bras. Hence his title, *duke of Brunswick-Œls.*

ŒNEUS. See *Calydon.*

ŒNOMAUS. See *Hippodamia.*

ŒSTRUS, or Gadfly; an insect, well known from its being one of the greatest annoyances to which horses and cattle are subject during the summer. Under the name of *gadfly* many insects are included by the ignorant which belong to other genera, the real gadflies being the *œstrus* of naturalists, which are supposed to be the same animals as were called by the Greeks *οἶστρος*. Horses, cows, sheep, deer, hares, &c., have each a species of gadfly which bears their name; as, for example, the *Œ. equi* is common upon horses, *Œ. bovis* and *Œ. ovis* upon horned cattle and upon sheep. The gadfly of the horse is a small insect, with whitish wings, with a band and black spot; the abdomen entirely ferruginous. *Œ. bovis* is about seven lines in length; thorax yellow, with a black band; abdomen white; terminal segments fulvous; wings dusky. This species attacks the horse also, the female depositing her eggs in the skin of these animals in considerable numbers. In a short time, the eggs are matured, and produce a *larva*, or worm, which immediately pierces the skin, and, insinuating itself under it, causes much injury and annoyance to the animal, raising large lumps, or tumours, filled with pus, upon which the larva feeds. *Œ. equi* deposits its eggs upon such parts of the skin of horses as are subject to be much licked by the animal, and thus they are conveyed to the stomach, where the heat speedily hatches the larvæ, too well known under the name of *botts*. Horses are sometimes so afflicted by these pests as to die in consequence. The perfect insect is seldom observed, as it lives but a very short time after arriving at the winged state. Taking no nourishment, it seeks but to deposit its eggs in a proper situation, and having accomplished this object, it immediately dies. The animals which are the subjects of its attacks are instinctively aware of its intentions, and exhibit much restlessness and alarm when they discover it. *Œ. ovis* deposits its eggs in the nostrils of sheep, where the larva is hatched, and immediately ascends into the frontal sinuses, attaching itself very firmly to the lining membrane by means of two strong hooks situated at its mouth. All the insects of the genus *œstrus* are thus distinguished by naturalists: haustellum, or trunk, concealed between two tumid lips, which are merely separated by a small orifice; palpi, none; antennæ short and setaceous. The oviduct, through which the eggs are extruded, consists of a membranaceous, cylindrical tube, furnished with three short, reflected, membranaceous bristles. The pupa is hard, and of an oval form, burrowing in the earth and under stones, where it experiences its final transformation into a winged insect. It has been observed that the larvæ of cutaneous *œstri* have the mouth furnished with simple papillæ, while those which infest the stomach and frontal sinuses are provided with strong oral hooks, by which they attach themselves very firmly to the membranes. During the months of June and July, the pupæ are transformed into the perfect insect. M. Humboldt states that, in South America, he observed some Indians whose abdomens were covered with small protuberances, which appeared to have been formed by the larvæ of a species of gadfly. It is also stated that a species exists which, in the larva state, inhabits the frontal sinuses of men. In Arabia, and in some parts of India where camels abound, there is also found a gadfly peculiar to them. An admirable monograph of these insects, illustrated by figures, and observations on their habits and economy, and veterinary observations, has been published in the Linnæan Transactions by Mr Bracy Clark, and since republished, with additions, in a separate volume.

ŒTA; a celebrated mountain in ancient Greece, between Thessaly and Macedonia; or, more accurately, a chain of mountains extending to the west from the gulf of Malia to Pindus, and thence to the bay of Ambracia. See *Hercules*, and *Thermopylæ*.

OFEN. See *Buda*.

OFFERINGS are gifts, which man brings to the Deity, in order to represent the giving up of himself to him. This was the first mode of openly recognising the Divine Being, and a principal part of the service of the Deity in all the religions of antiquity; and, even to this day, the inhabitant of the East makes offerings to God as he makes presents to his temporal lords. The idea that God has physical wants, and finds pleasure in food, drink, and perfumes, was the origin of such offerings, which took their character from the mode of life of those who presented them. Herdsmen and hunters offered beasts; husbandmen, fruits and bread, selecting the choicest of what they possessed. From similar feelings, Abraham consented to offer up his beloved son, and Agamemnon his daughter Ephigenia; though the fortunate issue of these offerings shows that, even in those early times, the pure idea existed that God did not desire the blood of men, and was appeased by a devout disposition. Still the custom of offering men as victims prevailed, even among those heathen nations who had emerged from their primitive rudeness. The Phœnicians offered children to their idol (Moloch); as did also the German nations, and the ancient Mexicans and Peruvians, to their gods. Afterwards, new motives were added to those of reverence and gratitude; men began to consider misfortunes and sufferings as divine punishments for their sins, and, to propitiate the offended Deity, even the life of man did not appear too valuable. But, while the altars of the heathen world flowed with the blood of innocent children and defenceless captives, Moses made unblemished beasts, and fruits, the symbols of the resignation and penitence of his people, before Jehovah. Offerings constituted the principal part of the Israelitish worship. These were either bloody, when the offering was bullocks, goats, and sheep, or, in case of necessity, doves, slain by the priests, which were wholly or partially burnt (burnt-offerings); or bloodless, when the offering was meal, cake, salt, oil, honey and frankincense, or wine, which was poured out upon the altar (drink-offerings). With regard to their meaning and object, these offerings were either thank-offerings and peace-offerings, which consisted of a bullock, or some small animal, and were usually accompanied with offerings of vegetable food; or trespass and sin-offerings, in which only animals were used. In the last-mentioned cases, the priests were accustomed to sprinkle the parties who made the offerings with the blood of the victims, as a sign of reconciliation with Jehovah; and where the offering was an expression of the penitence and expiation of the whole people, it was usual to burn the victim; but if it concerned only private persons, the priests used to eat the flesh. The offerings of beasts, and the first fruits (which were required to be offered on certain festivals, and in case of important occurrences in families, or for the expiation of individuals), belonged to the priests, who burned only the part that could not be eaten. The heathen priests enjoyed the same advantage; and although, among both Jews and heathen, the priests alone were allowed to offer the sacrifices, they permitted the givers to take a part in the feasts for which their offerings were used, from the time of the hecatombs of the Greeks, before Troy, down to that of the sacrifice banquets, which Theodosius, as is well known, abolished in A. D. 392, together with all the heathen worship in the Roman empire. The hecatombs of the Greeks and Romans were burnt-offerings; their libations, drink-offerings. The truth, confessed by the prophets of the Old Testament, that man cannot offer any thing to God which is not already his, Christianity acknowledged by the abolition of the heathen and Jewish offerings, and required of its professors only the moral offering of a renunciation of evil, the devotion of their powers and property to the welfare of mankind, and the perfect resignation of the heart to God. Consecrated gifts, however, were applied to the support of public worship and the clergy. Of this kind were the oblations of the first Christians. When the payment of tithes to the clergy was introduced, these offerings were withheld, and most generally commuted for money. With the oblations are connected the *offertoria*, which, according to a usage still existing among many religious sects, were laid, at an appointed time, for the priests, upon the altar. These *offertoria*, however, had nothing to do with the religious services. The mass is a conspicuous part of the worship in the Catholic church, and, even to this time, is called the *bloodless offering*; since, according to the doctrine of this church, the priest who officiates at the mass, offers anew, as it were, by the consecration of bread and wine, the body and blood of Christ, in the place of the Jewish sin-offering. The custom of making religious offerings exists among pagans also, in our time. The Chinese consecrates fruits to his divinities; the Carib, tobacco; the Negro, in the West Indies, brandy; and, among the savage inhabitants of some islands, there are still found traces of human sacrifices.

OFFERTORIUM, or OFFERTORY, is the anthem which is sung, or the music executed, while the people are making their offerings. It is one of the chief parts of the mass. See *Mass and Offering.*

OFFICERS, Field, are such as command a whole regiment; as the colonel, lieutenant-colonel, and major.

OFFICERS, General, are those whose command extends to a body of forces, composed of several regiments: such are generals, lieutenant-generals, major-generals, and brigadiers.

OFFICERS, Staff, at the English court, are such as, in the king's presence, bear a white staff or wand, and at other times, on their going abroad, have it carried before them by a footman, bare-headed: such are the lord-steward, lord-chamberlain, lord-treasurer, &c.

OFFICIAL, by the ancient law, signifies him who is the minister of, or attendant upon, a magistrate. In the canon law, it is especially taken for him to whom any bishop generally commits the charge of his spiritual jurisdiction.

OFFING, or OFFIN; that part of the sea a good distance from shore, where there is deep water, and no need of a pilot to conduct the ship.

OFFSETS, in gardening; those young shoots that spring from the roots of trees or plants, which, being carefully separated and planted in a proper soil, serve to propagate the species.

OFTERDINGEN, Henry of, or AFFTERDINGEN, EFFTERDINGEN; one of the most celebrated German poets of the twelfth and thirteenth centuries (the Suabian period,) of the circumstances of whose life little is known. His youth is said to have been passed in Austria, at the court of Leopold VII. Here he cultivated his poetical powers, and hence made journeys to different parts of the country. (See *Minnesingers*, and *German Poetry.*) At the court of Herman, landgrave of Thuringia, he sustained a poetical contest with Wolfram of Eschenbach (q. v.), and sang the praises of his emperor. Of his poetry we have nothing remaining except some passages of the War on the Wartburg, in the Manesse collection, and a part of the *Heldenbuch.* It is disputed whether he is the author of the *Nibelungenlied* (q. v.) or not. Novalis has given his name to one of his romances.

OG, king of Bashan, mentioned in the Bible, was, according to the accounts of the Rabbins, one of the giants who lived before the flood, and escaped the general inundation by taking refuge on the roof of Noah's ark. Noah fed him there, less through compassion, than that he might be to men of after times a proof of the power of God, who had created and destroyed from the face of the earth such monstrous creatures. In the war of Og against the Israelites, he lifted up a mountain 6000 paces in circuit, and was about to throw it down upon the camp of Israel, when it was pierced through by ants sent by God, and fell upon him. At the same moment his teeth grew so quickly, that they entered the mountain, and held him fast, so that Moses could kill him without difficulty. To give an idea of his gigantic size, the Rabbins say that Moses, who, according to their account, was six ells high, and had a battle-axe of the same length, was obliged to make a leap of six ells, in order to strike his ankle-bone. He bled to death of the wound.

OGDENSBURGH. See *Oswegatchie.*

OGECHEE LIME. See *Tupelo.*

OGEE ARCH. See *Architecture.*

OGINSKI; the name of an illustrious Polish house. *Michael Casimir Oginski*, commander in Lithuania, fought against the Russians; but the fate of his unhappy country obliged him to flee. He lost two-thirds of an immense fortune. He constructed the canal which bears his name, and unites the Baltic and the Black sea, entirely at his own expense. He died, seventy-two years old, in Warsaw, in 1803.

Michael Cleophas, nephew of the former, born in 1765, was foreign minister at the Hague, and fought on the side of Kosciusko, in 1794. At a later period he acted as the agent of the patriots in Paris and Constantinople. Alexander permitted him, in 1802, to return. In 1810 he was appointed senator and privy counsellor; but, in 1815, he went to Italy, and devoted himself to music. His compositions, particularly his *Polonaises*, are celebrated. His *Mémoires sur la Pologne et les Polonais depuis* 1788—1815 (Paris, 1826, 2 vols.) are important for the period from 1794 to 1798.

OGLETHORPE, James Edward; an English general officer, born in London in 1698, and educated at Oxford. He served under prince Eugene. In 1733 he distinguished himself by his exertions to found the colony of Georgia, for which he obtained the royal charter. He also conducted a body of emigrants to the province, at which time he was accompanied by the two Wesleys. In 1734 he returned, with an Indian boy in his suite, and, in 1736, revisited Georgia with another band of emigrants, and proceeded very successfully in the settlement of the colony. As commander of the British forces in Georgia and Carolina, he repelled the attempts of the Spaniards. In 1745 he was made major-general, and was employed to follow the rebels under the Pretender. The private character of general Oglethorpe was extremely amiable, and he has been eulogized by Thomson, Pope, and doctor Johnson.

OGYGES is mentioned as the most ancient ruler of Attica, then called *Acta*, about 1700 B. C. The Athenians call him a native of the country. According to other accounts he was king of the Hectenes, the original inhabitants of the country, first called *Ogygia*, and afterwards *Bœotia*, from the Bœotians. Even the building of Thebes is ascribed to him, and one of the gates of the city was named after him. The gate, however, is also said to have been so called from Ogygia, a daughter of Amphion and of Niobe. Under the reign of Ogyges happened the Ogygian deluge, which laid waste all Attica, according to Larcher, 1759 B. C. A later opinion is, that a colony of priests under an Egyptian king, Ogyges, came to Bœotia, and thence spread over Attica. The island of Calypso was also called *Ogygia*. See *Calypso.*

OHIO, one of the United States of America, is bounded north by Michigan Territory and lake Erie, which separates it from Upper Canada, east by Pennsylvania and the Ohio river, south by the Ohio river, which separates it from Virginia and Kentucky, and west by Indiana. The Ohio river, in its various windings, bounds this state 436 miles. Ohio is situated between 38° 30′, and 42° of north latitude, and between 80° 28′, and 84° 42′ of west longitude. It is about 222 miles in extent, both from east to west, and from north to south; but lake Erie projects so far into the northern borders, and the Ohio river cuts off so much of its southern quarter, that the area of the state is little more than 200 miles square. The state is divided by nature into four grand divisions, which are named after the principal waters on which they are situated. They are the Miami country, the Scioto country, the Muskingum country, and the Lake country. For civil purposes, Ohio is divided into seventy-three counties. In the greater part of the state, the towns or villages are not situated in townships of the same name; but the New England custom of nearly identifying *town* and *township* prevails in some parts of Ohio, which were settled principally from New England. In many cases, also, the post-offices in Ohio bear different names from the towns in which they are situated. The largest city of Ohio is Cincinnati, in the south-west corner of the state. Its population, in 1830, was 24,431, according to the official census. Another census of the same year made it 26,515, and, in 1831, it contained 28,014. Columbus, the seat of government, contained 2437 in 1830. Zanesville, Dayton, Steubenville, and Chilicothe, are larger than Columbus. The population of Ohio has increased, and increases, with wonderful rapidity. In 1790 it contained only 3000 inhabitants; in 1800, 45,365; in 1810, 230,760; in 1820, 581,434; in 1830, 937,637. There are remnants of several Indian tribes in Ohio, amounting, in 1829, to 2350 persons. They then owned 390,846 acres of land, besides 16,200 acres which were secured to individuals of the several tribes. These lands are secured by treaty to the Wyandots, Shawnees, Senecas, Delawares, and Ottawas; for the other remnants of tribes are classed with these. The Delawares have sold their share, amounting to 5760 acres. Considerable annuities are paid by the national government to these tribes. Their population gradually diminishes. There are very few negroes in Ohio, and none are held as slaves.

The Presbyterians in this state have 346 churches, and 22,150 communicants; the Baptists have 240 churches, and 8801 communicants; the Methodists have 36,064 members; the Lutherans have 8706 communicants; the Associate Presbyterians have sixty-five congregations, and 4225 communicants; the German Reformed have eighty-two congregations, and 3750 communicants; the Episcopalians have sixteen ministers; the New Jerusalem church have four societies: there are also a considerable number of Friends and Roman Catholics, and some Universalists, Unitarians, and Shakers. There are five colleges in operation in Ohio, viz. the university of Ohio, at Athens; Miami university, at Oxford; Western Reserve, at Hudson; Kenyon, at Gambier, and Franklin, at New Athens. There are no incorporated academies that are flourishing. Great attention is paid to common schools. An act passed by the legislature in 1831 provides that a fund shall be raised in the several counties in the state, for the use of common schools, for the instruction of the white youth of every class, without distinction, in reading, writing, and arithmetic, and other necessary branches of education. An asylum for the deaf and dumb has been established at Columbus, under the auspices of the state.—The principal domestic articles of trade are horses, cattle, swine, whiskey, and flour. Those articles which are exported from the northern and some interior counties are frequently sent to the Montreal and New York markets, by way of lake Erie. From the southern parts of the state, they are sent to New Orleans. The new canal from lake Erie to the Ohio river will have a tendency to divert the trade from New Orleans to New York. (For a description of the canals of Ohio, see the article *Canals*.) Lake Erie bounds Ohio on the north 160 miles. Its whole length is 270 miles, and its average breadth from forty to fifty. Its circumference is 600 miles, and its area is 11,000 square miles. It affords good navigation for steam-boats and schooners. The principal rivers are the Maumee, Portage, Sandusky, Huron, Vermilion, Black, Rocky, Cuyahoga, Grand, and Ashtabula, in the north; and the Mahoning, Muskingum, Hockhocking, Scioto, Little Miami, and Great Miami, in the south. The Ohio river, and its steam-boat navigation, will receive a separate description.

The interior and northern parts of Ohio are generally level, and, in some places, marshy. About one quarter of the eastern and south-eastern part, bordering on the Ohio river, is very hilly and broken. The hills are not, however, very large. Immediately on the borders of the Ohio there are numerous tracts of interval or meadow land of exuberant fertility. In the interior parts, bordering on both sides of the Scioto, and on the two Miamis, are the most extensive bodies of rich and level land. In many places are extensive prairies, particularly on the head waters of the Muskingum and Scioto, and between the two Miamis. Several of these are low and marshy, and others are elevated. The high prairies are not fertile. Among the forest trees are black-walnut, oak of various species, hickory, maple of different kinds, beech, birch, poplar, sycamore, ash of several species, pawpaw, buckeye, cherry, and many which are less common. The soil and climate are admirably suited to the most valuable vegetable productions that grow in this latitude. Wheat, maize, rye, and all other kinds of grain, grow here in great perfection. Scarcely any part of the United States is so productive, or affords so many of the natural means for an easy and comfortable subsistence. The summers are warm, and pretty regular, although somewhat subject to tornadoes. In some parts, near marshes and stagnant waters, fevers and agues frequently prevail; but the climate, in general, is decidedly healthy. The general temperature, in that part of the state which slopes to the south, is several degrees warmer than in the same latitude in the Atlantic states. In the Miami country, especially about Cincinnati, green peas, and many other vegetables, are generally abundant in the markets between the first and twentieth of May. Snow seldom falls deep enough for sleighing, or lasts more than two or three days, in the southern half of the state; but there are generally two or three days of extremely cold weather. In the counties bordering on lake Erie, and for fifty miles back, there are often several weeks of good sleighing. The winds of Ohio, whether high or low, generally blow from the west and south-west at all seasons. About one fifth part of all the land in Ohio still belongs to the United States. Settlers on this land will become citizens of Ohio; but the purchase-money belongs to the general government. In the north-east part of the state is a tract containing 3,300,000 acres, called New Connecticut, or Connecticut Western Reserve. The fee of these lands is in the state of Connecticut, but Ohio has the jurisdiction. This tract is divided into eight counties, and is principally settled by emigrants from Massachusetts and Connecticut. The state of Virginia also owns a tract of 4,204,800 acres, called the Virginia Military Lands, and situated between the Scioto and Little Miami rivers. This district is not surveyed into townships, or in any regular form; and there are frequently many claimants to the same lot, whose rights are not easily defined. Eight counties are situated wholly within this district, and a part of fourteen others.

The first permanent settlement in the state of Ohio was made at Marietta, April 7, 1788, by forty-seven persons from Massachusetts, Rhode Island, and Connecticut. The next year, a settlement was made at Columbia, six miles above Cincinnati, by a company principally from Pennsylvania. In 1791, several French emigrants settled at Gallipolis. In Sep tember, 1799, the first territorial legislature assembled at Cincinnati, under the ordinance of congress of July 13, 1786, for the government of the territory of the United States north-west of the river Ohio. April 30, 1802, congress passed an act authorizing the calling of a convention to form a state constitution for that part of the North-West Territory which now constitutes the state of Ohio. On the first of November following, the convention met at Chillicothe, and formed the present constitution (for which see *Constitutions of the United States*). In several parts of Ohio are found remarkable antiquities in the shape of mounds, or *tumuli;* and also remains of ancient forts. For a description of these, see the article *Tumuli.*

OHIO, a river of the Mississippi Valley, is formed by the confluence of the Alleghany and the Monongahela at Pittsburg, in the western part of Pennsylvania. It flows with a gentle current, generally in a south-western direction, but with a very serpentine course, and unites with the Mississippi in latitude 37° N., and longitude 88° 52′ W. Its length from Pittsburg to its mouth, is about 900 miles, including its windings; but the direct distance is only 614 miles. Its breadth varies from 400 to 1400 yards. At Cincinnati, it is about 800 yards, which is nearly its average breadth. It is very well suited to boat navigation, although its numerous windings render a passage upon it rather tedious. The current of the Ohio is remarkably gentle, and is broken by falls or rapids only at Louisville, in Kentucky. At this place, the water runs with great rapidity for several miles; yet the current is not so broken as entirely to prevent the ascent of boats. The whole perpendicular descent in two miles is twenty-two and a half feet. The canal around these rapids (for an account of which see *Louisville*) greatly facilitates the navigation of this river. Letart's rapids, twenty-five miles below Shade river, form a slight obstruction in some stages of the water. Numerous islands, large and fertile, are embosomed in the Ohio. Its annual range, from low to high water, is about fifty feet: the extreme range is about sixty feet. When lowest, it may be forded at several places above Louisville. It is generally lowest in August, September, and October, and highest in December, March, May, and June. Near Pittsburg, it is frequently frozen over for several weeks during winter; and this has been the case more than 400 miles lower. Generally, the navigation upward is suspended by floating ice during eight or ten weeks of each winter. Its current, when the river is at its mean height, is about three miles an hour; when higher and rising, it is more; when very low, it does not exceed two miles an hour. The numerous islands form no serious obstruction to its navigation, except at low water, when the bars and ripples connected with them are somewhat dangerous. Steam-boats have been found to be peculiarly well adapted for its navigation. The whole number of steam-boats built on the western waters is 348: the number running in 1831 is 198. Of these, sixty-eight were built at Cincinnati, sixty-eight at Pittsburg, twelve at New Albany, and nearly all the others in Ohio and Kentucky. A great part of these boats are employed in the commerce of the states bordering on the Ohio; but they also connect with it the commerce of the states on the Mississippi. The tract of country through which the Ohio flows is one of the richest and most delightful on the globe. The wealth of the neighbouring states is easily transported to this channel by the numerous navigable rivers which it receives, and is thence conveyed to New Orleans—the grand commercial emporium of the Mississippi Valley.

OIL. The general characters of this substance are inflammability and insolubility in water. Oils are distinguished into two classes, fixed or fat oils (see *Fat*), and volatile or essential oils. (See *Essential Oils.*) The former class do not rise in distillation at the heat of boiling water, while the latter rise into vapour at all degrees of temperature. When exposed to the action of the air, the oils by degrees lose their liquidity, thicken, and occasionally become hard. Such as become indurated so as not to stain paper when applied to it, take the name of *drying* oils; such as linseed oil, poppy-seed oil, nut oil, &c. Such as do not harden in this way are called *unctuous* oils; as olive oil, almond oil, rape-seed oil, &c. In this change no water is formed; some carbonic acid is evolved, but not nearly equivalent to the oxygen absorbed. The recent fixed oils exercise on oxygen hardly any action for a long time; but they suddenly suffer a change of state, which enables them to absorb at least 100 times more of it than volatile oils would do in the same time. A layer of nut oil, three lines thick and two inches in diameter, laid on mercury in the shade, in pure oxygen gas, absorbed only a volume equal to thrice its own, during eight months, namely, between December and August; but, during the ten following days, it absorbed sixty times its volume. This absorption continued to proceed with more slowness till the end of October, when the further diminution of the gas became insensible. By this time the oil had absorbed 145 times its bulk of oxygen, and had formed twenty-one volumes of carbonic acid gas. No water was produced, but the oil had become a mass of transparent jelly, which did not stain paper. This sudden change, at a certain crisis, in the state of the drying oils, explains the *spontaneous inflammations* which they are known to produce, and of which the volatile oils afford no examples.

OILEUS; one of the Argonauts. See *Ajax.*

OIL GAS. It had long been known that wax, oil, tallow, &c., when passed through ignited tubes, are resolved into combustible gases, which burn with a rich light. Messrs Taylor and Martineau were the first to avail themselves of this fact, in the construction of apparatus for generating oil gas on a large scale, as a substitute for candles, lamps, and coal gas. The advantages of oil gas, when compared with coal gas, are claimed by these gentlemen to be the following: The material from which it is produced containing no sulphur or other matter by which the gas is contaminated, there are no objections to its use on account of the suffocating smell in close rooms. It does no injury to furniture, books, plate, pictures, paint, &c. All the costly and offensive operation of purifying the gas by lime, &c., are avoided; nor does the metal of which the conveyance pipes are made receive the slightest injury from oil gas. The economy of light from oil gas is thus stated:—

Argand burner, oil gas, . .	¼d.	per hour.
Argand lamps, spermaceti oil,	3d.	— —
Mould candles, ...	3½d.	— —
Wax candles.	14d.	— —

The oil gas has a material advantage over coal gas from its peculiar richness in olefiant gas, which renders so small a volume necessary, that one cubic foot of oil gas will be found to go as far as four of coal gas. This circumstance is of great importance, as it reduces in the same proportion the size of the gasometers which are necessary to contain it. This is not only a great saving of expense, but is a material convenience where room is limited. The iron retorts employed, after a slight using, cease to afford the gas, from an alteration produced on the iron by the action of oil at a high temperature, and require the introduction of fragments of brick, mingled with the oil, which produce a great increase of the decomposing power. A general idea of the process may be formed from the following account:—A quantity of oil is placed in an air-tight vessel, in such a manner that it may flow into retorts, which are kept at a moderate red heat, and in such proportions as may regulate the production of gas to a convenient rate; and provision is made that this rate may be easily governed at the will of the operator. The oil, in its passage through the retorts, is principally decomposed, and converted into gas proper for illumination, having the great advantages of being pure from sulphureous contamination, and of supporting a very brilliant flame with a very small expenditure. As a further precaution, to purify the gas from oil which may be suspended in it in the state of vapour, it is conveyed into a wash vessel, where, by bubbling through water, it is further cooled, and rendered fit for use. It then passes, by a proper pipe, into a gasometer, from which it is suffered to branch off in pipes in the usual manner.

OIL OF VITRIOL. See *Sulphuric Acid*.

OIL-PAINTING. The art of painting with oil-colours, which to this day are the kind most commonly used for large pictures, has, on account of its liveliness, strength, agreeableness, and natural appearance, on account of the variety and mixture of tints,— in short, on account of the charm of the colouring,—pre-eminence above other kinds of painting. The colours are somewhat darker, but also more brilliant than water-colours. Painters in oil-colours have succeeded in imitating the enamel with which nature adorns her productions, the softness and mellowness which give the greatest charms to landscape, the transparency of the shades, and the blending of the colours. Oil-paintings are also but little injured by exposure to water and other moisture, for the oil-colour is not easily destroyed when it is once dried, and a spot can be painted over as often as the artist pleases. The frequent retouching which this kind of painting allows, enables the artist to produce the finest harmony, and the highest effect of colours, with more ease than is possible with water-colours, which must be left to stand as they were first laid on. Oil-colours can also be laid on over each other, so that the under one appears through—an important advantage, which water-colours have not. Besides, as oil-colour is tenacious, and the neighbouring tints do not run into each other, the painter can obtain both a better mixture and a more suitable juxtaposition of colours than in water-colours. On the other hand, oil-paintings have the disadvantage of dazzling by the glittering of the light falling upon them: for this reason, an oil-painting cannot be seen equally well from all points of view; and the dust adheres to it more closely, which evil will be often prevented by a coat of varnish. In the course of time the colours gradually become darker; the flesh tints, particularly, take a reddish yellow colour, by which the truth of the picture is very much injured. The fault is in the oil with which the colours are made; for all kinds of oil become yellow in time. Nut oil is most commonly made use of, with which the colours are dissolved and ground, and which is drying in its nature. The linseed oil, as it is grossest and fattest, is used for the groundwork. Oil of poppy is also substituted for nut oil. It is whiter, clearer, and lighter: but, as some colours, when they are ground, dry with much difficulty, various kinds of varnish are used to mix with such colours. A great advantage of oil-painting is that the painter can judge with more certainty of the effect of his work, since the colours do not change in drying, as water-colours do: only, in order to prevent the colours growing too dark, he must, at the beginning, make the tone somewhat strong and brilliant, and preserve the right proportion in the oil Many, therefore, mix in some oil of spikenard, which makes the colours more liquid, and evaporates rapidly. The brilliancy of the colours often only hurts the effect of the picture.

Oil-paintings are made upon wood, copper, and other metals; also upon walls, thick silk; but now most commonly upon canvass, which is stretched upon a frame, and done over with glue or gold for a ground; by some, also, with white water-colours. When the canvass is prepared, the outlines are drawn with white chalk, and then the colours are laid on. The colours are ground with what is called a *muller*, upon a porphyry stone, until they have the consistency of a thick paste. The pallet is made use of in order to have the prepared colours in a convenient situation for the work, the same being mixed and arranged in a proper series. At first the groundwork is put on, and the sketch must be made with the same tints with which the picture is finished. A person of the name of Picault is called the inventor of the art of removing the colours of oil-paintings from wood, and transferring them to canvass. In later times it has been the custom to shave off the worm-eaten wood very nicely, as far as the under side of the picture, and to transfer the latter to new wood. (See Fiorillo's *History of the Arts of Design*.) Still more common is the art of painting over (or retouching) oil-paintings; and it has arrived at a high degree of perfection. Yet it is almost impossible to prevent the traces of this process from being seen after some time. It is also customary to stretch upon new canvass oiled paintings executed on canvass, when the canvass begins to decay, or become torn, and peel off.

There has been much contention about the origin and the antiquity of oil-painting. The old and general opinion was, that John van Eyck (q. v.), also called *John of Bruges*, invented this art in the fourteenth century. According to a late opinion, oil-painting is much older than the time of John van Eyck, and was carried on in his time in Italy. For this opinion Cennini's treatise on painting is quoted. Cicognara also considers it of Italian origin, and ascribes the improvement of it to the Netherlands, who seem to have the more foundation for their claim to the invention, because the artists there do not paint in fresco generally, on account of their climate. If he is correct, the Netherlands would be entitled only to the credit of having perfected or restored this art, which before was not so advantageously practised, and, on account of numerous difficulties, had declined. Some, indeed, attribute this invention to Antonello of Messina, others to Col. Antonio di Fiore of Naples. Fiorillo, in his History of the Arts of Design, holds to the old opinion. It is certain that oil-painting was interrupted a hundred years before the time of Eyck, and in the fourteenth and fifteenth centuries, until his time, water-colours were universally used. Indeed, they continued in frequent use at least until 1469. John van Eyck was fond of chemistry, and his acquaintance with this science gave him an opportunity of restoring oil-painting. He discovered a varnish with which he covered his pictures in water-colours, and gave them more brilliancy and strength; but this varnish dried with difficulty, and when, for the first time, he put one of his pictures in the sun, it cracked. This induced him to make another varnish out of nut and linseed oil, which proved to be better than the former. He observed that the colours mingled much easier with oil than with glue-water, and that decided him to follow this method. He began with it between 1402 and 1410, and instructed also two of his countrymen in it, namely, Roger of Bruges and Roger van der Weyden. Succeeding painters perfected the art still more.

OISE; a department of France. See *Department*.

OLA, or OOLA; a Mongol word for *mountain*, occurring in many geographical names.

OLAVIDES, DON PABLO, count of Pilo, born at Lima, in Peru, in 1740, went at an early age to Madrid, where his talents and activity soon raised him to important stations. He accompanied count d'Aranda on his embassy to France, in the capacity of secretary. Charles III. created him count, and appointed him intendant of Seville. Olavides formed several great and useful plans of public improvement, particularly one for bringing the Morena into cultivation. Charges of heresy interrupted these projects, and the man who had done so much to promote the splendour and prosperity of his country, was condemned to imprisonment and monastic penances by the inquisition, in 1778. In the third year of his confinement he succeeded, by the aid of his friends, in escaping to Venice, whence he afterwards returned to Spain, and died in 1803. A defence of religion against infidelity—*El Evangelio en Triunfo*, which, in two years, passed through eight editions—is attributed to Olavides.

OLDCASTLE, SIR JOHN, (lord Cobham,) was born in the fourteenth century, in the reign of Edward III. and obtained his peerage by marrying the daughter of lord Cobham. He excited the resentment of the clergy by his zealous adherence to the doctrines of Wickliffe, whose works he collected and transcribed, distributing them among the people. In the reign of Henry IV. he was at the head of an English army in France during the Orleans and Burgundian factions, and he obliged the duke of Orleans to raise the siege of Paris. Under Henry V. he was accused of heresy; but the king, with whom he was a favourite, delayed the prosecutions against him, and tried to reason with him, and to convince him of his alleged errors, but in vain; and he soon after left him to his fate. He was then cited before the archbishop of Canterbury, and not being able to satisfy his accusers, he was condemned as a heretic, and committed to the Tower, whence he escaped into Wales. A report was then zealously circulated by the clergy, and sent to the king, that 20,000 Lollards were assembled at St. Giles's for his destruction, with lord Cobham at their head. This accusation seems to have been fully credited by Henry, though there does not appear to have been really the slightest foundation for it, on which a bill of attainder was passed against lord Cobham; and he was burned alive in St. Giles's-fields in 1417. He was a man of high spirit and warm temper, which his misfortunes could not subdue. His acquirements were extensive, and his thirst after knowledge first made him acquainted with the doctrines of Wickliffe. In conversation, he was remarkable for the poignancy and readiness of his wit. He wrote Twelve Conclusions, addressed to the Parliament of England, published in Bale's Brefe Chronycle concernyng the Examynacyon and Death of the blessed Martyr of Christ, Syr Johan Oldecastle, the Lorde Cobham, which was reprinted in 1729.

OLDENBURG; a duchy of the Germanic confederacy, in the north part of Germany, consisting of three distinct parts—Oldenburg proper and its dependencies, bounded by the North sea and the Hanoverian territories (2332 square miles, 196,100 inhabitants); the principality of Lubeck, surrounded by Holstein and Lauenburg (200 square miles, 21,000 inhabitants); and the principality of Birkenfeld, lying between the Prussian province of the Lower Rhine and the duchy of Saxe-Coburg-Gotha (190 square miles, 23,600 inhabitants). The principal rivers are the Weser, the Trave, the Nahe. The face of the country is in general very low, and is intersected with numerous canals and dikes to drain off the waters and preserve it from inundation. A considerable part of the country is sandy or marshy, and, although agriculture is the principal occupation of the inhabitants, does not yield corn enough to supply their wants. The power of the duke is not limited by the estates, which are convened merely for the imposition of taxes. The revenue amounts to 1,500,000 guilders. The taxes are considered the lowest in Germany. The duke of Oldenburg has, with Anhalt and Schwartzburg, the fifteenth vote in the Germanic diet, and by himself one vote in the *plenum*. His contingent to the federal army is 2178 men. The capital of the duchy is Oldenburg, a well-built city, with a handsome ducal palace lying on the Hunte, which is navigable for small vessels. Population, 5800. The house of Oldenburg is one of the most ancient in Europe. The first count of Oldenburg built the city of that name in 1155, and his descendants have reigned in Denmark. In 1647, the county of Oldenburg, together with that of Delmenhorst, which had been united with it, passed, by the extinction of the reigning branch, to the Danish line. In 1773, the latter ceded Oldenburg, in exchange for Holstein, to the emperor of Russia, who conferred it on his cousin, the bishop of Lubeck. In 1777, Oldenburg, with Delmenhorst, was made a duchy. Considerable additions were made to the Oldenburg territories in 1803, most of which were incorporated with the French empire in 1810 (comprised in the departments, Mouths of the Weser, and Mouths of the Elbe), but restored by the congress of Vienna, with the addition of the principality of Birkenfeld in 1813.—See Von Halem's *History of the Duchy of Oldenburg* (in German); and Kohli's *Description of the Duchy of Oldenburg* (in German, Bremen, 1824); see also, the articles *Europe* and *Germany*.

OLDFIELD, ANN; a celebrated English actress, born at Westminster, in 1683. Her father held a commission in the guards; but, dying while she was young, she was apprenticed to a seamstress. Her talents attracted the notice of Farquhar, the author of the Beaux' Stratagem, who introduced her to Sir John Vanbrugh, through whose means she obtained a theatrical engagement in 1699. She first distinguished herself in the character of Alinda, in the Pilgrim of Beaumont and Fletcher; but it was not till 1703, when she appeared as Leonora, in Sir Courtly Nice, that her merits were properly appreciated; and, having the advantages of a good figure and a fine voice, she soon became a general favourite. Her great excellence lay in comedy, and the parts of lady Betty Modish, in the Careless Husband, and lady Townly, in the Provoked Husband, of Cibber, were those in which she was most admired; but she sometimes also appeared in tragedy, and in such characters as Calista and Cleopatra, her talents were very conspicuous. She was the acknowledged mistress of Mr Arthur Maynwaring for some years previously to his death in 1712; and she afterwards became connected with general Churchill. Her death took place Oct. 23, 1730; and her corpse, after lying in state, was interred in Westminster abbey.

OLD MAN OF THE MOUNTAINS. See *Aloadin*.

OLD STYLE. See *Calendar*.

OLEARIUS, ADAM (properly *Œlschläger*), born about 1600, at Aschersleben, in Halberstadt; after finishing his studies at Leipsic, went to Holstein, and became mathematician and librarian to the duke of Holstein-Gottorp. In 1633, he was attached to a legation to Moscow, and, in 1635, to a second legation to Russia and Persia. After his return in 1639, Olearius published an account of his travels (*Neue* *orientalische Reisebeschreibung*, Sleswic, 1647; often reprinted), with translations of the *Gulistan* of the Persian poet Saadi, and of the fables of Lokman. In 1651, he was received into the Fruit-bearing Society, under the name of *Vielberühmte* (much famed), and died in 1671.

OLEFIANT GAS was discovered at Haarlem, in 1796, by the associated Dutch chemists, and received its present name from its property of giving rise to a substance resembling oil, when mingled with chlorine (*oleum fio*). It is sometimes called *bi-carbureted*, or *per-carbureted hydrogen*, and *hydroguret of carbon.* It is prepared by mixing in a capacious retort six measures of strong alcohol with sixteen of concentrated sulphuric acid, or one measure of common alcohol and three of ordinary oil of vitriol, and heating the mixture over an argand lamp. The acid soon acts upon the alcohol; effervescence ensues, and olefiant gas passes over. At the commencement of the process, the olefiant gas is mixed with a little ether; but in a short time the solution becomes dark, the formation of ether declines, and the odour of sulphurous acid begins to be perceptible; and towards the close of the operation, though olefiant gas is still the chief product, sulphurous acid is freely disengaged, some carbonic acid is formed, and charcoal in large quantities deposited. The olefiant gas is collected over water or mercury. The greater part of the ether condenses spontaneously; and the sulphurous and carbonic acids may be separated by washing the gas with lime-water or potash. The olefiant gas, in this process, is derived solely from the alcohol; and its production is owing to the strong affinity of sulphuric acid for water. Alcohol is composed of carbon, hydrogen, and oxygen; and from the proportion of its elements it is inferred to be a compound of eight parts, or one equivalent of oxygen gas united with one equivalent, or nine parts of water. It is only necessary, therefore, to obtain olefiant gas, to deprive alcohol of the water which is essential to its constitution; and this is effected by sulphuric acid. Olefiant gas is a colourless, elastic fluid, which has no taste, and scarcely any odour when pure. It extinguishes flame, is unable to support the respiration of animals, and is set on fire when a lighted candle is presented to it, burning slowly, with a dense white light. With a proper quantity of oxygen gas, it forms a mixture which may be kindled by flame or the electric spark, and which explodes with great violence. On conducting this experiment with care, it is found that, for each measure of olefiant gas, precisely three of oxygen are required, when the mixture wholly disappears, giving rise to a deposition of water and two measures of carbonic acid. Olefiant gas, by weight, consists of

Carbon, ...	25·418
Hydrogen, ...	42·36

When olefiant gas is mingled with chlorine in the proportion of one measure of the former to two of the latter, they form a mixture which takes fire on the approach of flame, and which burns rapidly, with formation of muriatic acid gas, and deposition of a large quantity of charcoal. But if the gases are allowed to remain at rest after being mixed together, a very different action ensues. The chlorine, instead of decomposing the olifiant gas, enters into direct combination with it, and a yellow liquid, like oil, is generated. This substance is sometimes called *chloric ether;* but the term *hydrocarburet of chlorine,* as indicative of its composition, is more appropriate. To obtain it pure, and in a dry state, it should be well washed with water, and then distilled from chloride of calcium. As thus purified, it is a colourless, volatile liquid, of a peculiar sweetish taste and ethereal odour. Specific gravity, 1·2201. It boils at 152° Fahr., and may be distilled without change. Its composition is

Chlorine. . .	2·5	36 one proportion;
Olefiant gas, . .	0 9722	14 one proportion.
	3·4722	50

From an observation made by professor Silliman, that the chloric ether is readily soluble in alcohol, imparting to it its peculiar sweet taste, and forming with it a grateful diffusive stimulant, Mr Guthrie, of Sackett's Harbour, has been led to attempt the manufacture of this etherized spirit in a more economical way, in which he has fully succeeded. The following is his process:—Into a clean copper still put three pounds of chloride of lime and two gallons of alcohol, of specific gravity ·844, and distil. Watch the process, and when the product ceases to come highly sweet and aromatic, remove and cork it up closely in glass vessels. The remainder of the spirit should be distilled off for a new operation. The quantity of ethereal spirit afforded is one gallon. So far as the effects of this new stimulant have been tried, it is found to be singularly grateful, both to the palate and stomach, producing promptly a lively flow of animal spirits, and leaving, after its operation, little of that depression consequent to the use of ardent spirit. Olefiant gas unites also with iodine, by exposing it to the vapour of iodine in the direct rays of the sun. The *hydrocarburet* of *iodine* thus formed is a solid, white, crystalline body, which has a sweet taste and aromatic odour. It consists of

Iodine, . . .	124, or one proportion;
Olefiant gas, . .	14, or one proportion.

A *hydrocarburet* of *bromine* is also formed by adding one part of hydrocarburet of iodine to two parts of bromine, contained in a glass tube. Instantaneous reaction ensues, attended with disengagement of caloric and a hissing noise; and two compounds, the bromuret of iodine and a liquid hydrocarburet of bromine, are generated. The latter, after being washed with a solution of potash, is colourless, heavier than water, very volatile, of a penetrating ethereal odour, and an exceedingly sweet taste, which it imparts to water. This compound is also formed by letting a drop of bromia fall into a flask full of olefiant gas.

OLEIC ACID. When potash and hog's lard are saponified, the margarate of the alkali separates in the form of a pearly-looking solid, while the fluid fat remains in solution, combined with the potash. When the alkali is separated by tartaric acid, the oily principle of fat is obtained, which is purified by saponifying it again and again, recovering two or three times, by which means the whole of the margarine is separated. As this oil has the property of saturating bases, and forming neutral compounds, it is called an acid. It is an oily fluid, without taste and smell; specific gravity 0·914. 100 of the oleic acid saturate, 16·58 of potash, 10·11 of soda, 7·52 of magnesia, 14·83 of zinc, and 13·93 of peroxide of copper.

OLERON LAWS; laws relating to maritime affairs, and so called because made by king Richard I., when at the isle of Oleron, in Aquitaine. See *Commercial Law.*

OLIBANUM. See *Frankincense.*

OLIGARCHY (from ὀλίγος, few, and ἀϱχη); that species of aristocracy where the supreme power rests with a few individuals—the worst of all governments.

OLIVA; a Cistercian abbey, not far from Dantzic, memorable for the peace concluded there, May 3, 1660, which terminated the war between Sweden, Poland, the emperor, and Brandenburg. John Casimir, king of Poland, renounced his claims on Sweden; Sweden renounced Courland; both powers acknowledged the independence of Prussia. In consequence of this, Sweden restored Drontheim and Bornholm to Denmark by the peace of Copenhagen, May 27, 1660, and concluded the peace of Kardis (1661) with Russia. The peace of Oliva is important because it laid the foundation of the subsequent political relations of the north of Europe. See J. Gottlob Boehme's *Acta Pacis Olivensis inedita* (Breslau, 1763 and 1765, 4to.)

OLIVAREZ, Gasparo de Guzman, count of, duke of Saulucar, was born at Rome (where his father was ambassador to pope Sixtus V.), of a distinguished Spanish family. The house in which he came into the world was on the site of Nero's palace—a circumstance which gave rise to a comparison of his inflexible severity with the barbarities of that emperor. His father was suspected of having poisoned the pope. If this were the case, he was but poorly rewarded by his court, since his means were so limited that he was hardly able to educate his son at the university. The ambitious youth, however, insinuated himself into the favour of Philip IV., of whose amours he was the confident. The favourite soon supplanted the duke of Uzeda, as prime minister, and, for twenty-two years, his power was almost unlimited. The beginning of his administration was marked by measures of public utility; but his sole object soon became the extortion of money from the subjects to supply the expenses of the war with the neighbouring powers. His severity occasioned revolts in Catalonia and Andalusia. The Portuguese, disgusted by his government, threw off the Spanish yoke, and acknowledged the duke of Braganza king, in 1640. Olivarez communicated the intelligence of this event to the king, as a subject of congratulation, since it justified the confiscation of the enormous possessions of the duke in Spain. The war, however, was so fatal to Spain, whose armies were defeated by the French, and whose fleets were destroyed by the Dutch, that the king was finally compelled by the public discontent to dismiss his minister. (See *Spain*.) Olivarez was thus forced to retire from the stage, at the moment when, delivered from his formidable rival, Richelieu, he might have perhaps succeeded in retrieving affairs. He would probably have been recalled, had he not written an apology for his measures, by which he offended several powerful individuals, in consequence of which the king found it expedient to confine him at Toro, where he died in 1645.

OLIVE (*olea Europea*). This interesting tree, in the more northern districts, does not usually attain a greater height than eighteen or twenty feet, with a trunk one or two feet in diameter; but in warmer climates, it rises to the elevation of forty or fifty feet. It grows slowly, and is very long-lived. Notwithstanding the name, it is not a native of Europe; but it has been so long cultivated on the borders of the Mediterranean, that the period of its introduction from Asia is utterly unknown. In its general appearance, the olive-tree bears some resemblance to the willow, but it possesses very little beauty. As in the other species of the genus, the leaves are evergreen and entire; they are opposite, lanceolate, from one to two and a half inches long, and their inferior surface is covered with a scaly powder, which gives them a silvery appearance. The flowers are small, white, and are disposed in branching, axillary racemes; the corolla is monopetalous, surrounding two stamens and a single style. The fruit is an ovoid and more or less elongated drupe, with a thin, smooth, and usually blackish skin, containing a greenish soft pulp, adherent to a rough, oblong, and very hard stone; it is almost the only example of a fruit with an oily pulp. Like other plants which have been long cultivated, a great number of varieties have arisen from the influence of soil, exposure, and especially of different modes of cultivation. The clive was celebrated in the mythology of the ancients; olive wreaths were used to crown the brows of victors. By the Greeks and Romans it was revered, and was considered the emblem of peace and humility. It furnished that oil which, for a long time, was the only kind known, and which was employed by most nations in religious ceremonies. The athletes anointed their bodies with olive oil when preparing for gymnastic exercises; and it was very generally used in the same manner on coming out of the bath. The oil is still the principal product of the olive, and is consumed in immense quantities for culinary purposes, in many countries. It is inodorous, and the taste is very mild; but, if taken in large quantities, it is purgative. Great quantities are used in the manufacture of soap; and in the south of Europe it is burned in lamps. The fruit has too much asperity to be eaten in its natural state, except in one or two varieties; but after being prepared in various manners, it furnishes an important article of nourishment to the inhabitants of olive countries, and, moreover, makes its appearance on the tables of the rich in almost every part of the globe. The oil, together with the pickled fruit, is the source of a very extensive commerce between the Mediterranean and the north of Europe: in many districts, the whole population is entirely dependent on this branch of business. From the Levant, and particularly from some islands in the Archipelago, immense quantities of pickled olives are exported to the market of Constantinople. The oil which is obtained by simple expression, without the use of boiling water, is the best and purest; and that made in some parts of France is now the most highly esteemed.

A temperate and equable climate is essential to the constitution of the olive. Too much heat is as hurtful to it as severe cold. In Europe it has never been successfully cultivated north of latitude 45°; but it would seem that it is less the intensity than the suddenness of cold after mild weather, that is injurious; for the trees have been known to endure very severe cold, and again to be destroyed by an ordinary frost coming on after the sap has begun to ascend. The olive grows in every kind of soil, provided that it is not marshy. It is planted at intervals of twenty or thirty feet, as it requires plenty of air and light. It is easily multiplied by cuttings and pieces of the root, and so tenacious of life that a piece of the bark covered with earth has produced shoots and roots at the end of forty-two days. It is best raised from seed, or from wild plants taken from the woods, which are grafted with the desired variety. The proverb, that "no man who has planted an olive has ever tasted the fruit," though by no means literally true, has arisen from the extreme slowness of its growth. The fruit is ripe about the end of November or beginning of December; but the product is abundant only every other year. The wood is yellowish, fine-grained, hard, and susceptible of a brilliant polish. Although highly esteemed, it is too valuable a tree to be much employed in the arts.

Sixteen other species of olive are known—all trees or large shrubs, with opposite, or rarely alternate leaves, and small flowers, disposed in racemes or panicles. Among them is the *O. fragrans*, a native of China, Japan, and Cochin China: the flowers are highly odoriferous, and are used by the Chinese to mix with and perfume their tea, and also, together with the leaves, for adulterating it. The only species inhabiting the United States is the *O. Americana*, called, in some districts, *devil-wood*, according to

Michaux, on account of the excessive hardness and extremely difficult splitting of the wood. Notwithstanding this quality, it is neglected in the arts. The leaves are broad, lanceolate, coriaceous, entire, and shining. The fruit is a globose drupe, about twice as large as a pea, and purple when ripe. It is a large shrub, or small tree, sometimes, however, reaching the height of thirty or thirty-five feet, with a trunk of ten or twelve inches in diameter. It is a maritime species, and grows in company with the live-oak and cabbage-palm. It is found thinly disseminated along the sea-coast, from lat. 37° to Florida, and along the shores of the gulf of Mexico to Louisiana.

OLIVENITE; an ore of copper (q. v.).

OLIVES, MOUNT OF; a hill near Jerusalem, from which it is separated by the valley of Jehoshaphat and the brook Kedron. It is still, as formerly, covered with olive trees.

OLIVIER, GUILLAUME ANTOINE; an eminent French naturalist and traveller, member of the institute and of the agricultural society of Paris. He was born near Frejus in 1756, and studied at Montpellier, where he received the degree of M. D., at the age of seventeen. Natural history, and especially botany and entomology, were his favourite pursuits; and at the age of twenty-three he went to Paris to assist in the composition of a work, relative to the natural history of the district in which that metropolis is situated. He was afterwards sent into England and Holland to collect materials for a general history of insects, and was also employed on the entomological part of the *Encyclopédie Méthodique.* The revolution having arrested the progress of both these enterprises, Olivier travelled to Persia, together with M. Bruguières, another man of science, on a diplomatic mission, planned by the minister Roland, whose death deprived the envoys of the financial resources and official protection on which they had calculated. Olivier returned to Paris in December, 1798, after an absence of six years, during which he visited Egypt, Greece, Turkey, Arabia, Persia, and other Eastern countries. He brought home numerous and valuable collections of curious objects of natural history, of which he published an account in his *Voyage dans l'Empire Ottoman, l'Egypte, et la Perse* (3 vols. 4to, with an atlas and plates.) He died at Lyons in 1814.

OLIVINE is found in olive-coloured grains and imperfect crystals, whose primary form is a right rectangular prism. These crystals are rarely found possessed of numerous modifications and of considerable dimensions. The cleavage parallel to the bases of the prism is highly perfect. Lustre, vitreous; colour various shades of green, as pistachio-green, olive-green, and grass-green; streak white; transparent or translucent; hardness between that of feldspar and quartz; specific gravity 3·44. With the foregoing description, the characters given of chrysolite (q. v.) agree in every important respect; and therefore these minerals are at present conceived to be identical. Those varieties have been called *chrysolite* which are crystallized, and possessed of handsome colours and a high degree of transparency. According to the best analyses, this species has the following composition:

Magnesia,	50·6
Silica,	40·5
Oxide of Iron,	8·9

Before the blow-pipe, olivine assumes a darker colour, but does not melt, nor lose its transparency. It may be artificially produced, by mingling its ingredients in the proper proportions, and exposing them to a high temperature. The original locality of imbedded crystallized olivine is not now known; the crystals are said, however, to come from Upper Egypt and are frequently brought to Europe by way of Constantinople. Less distinct crystals, and imbedded grains, are found in lava, in various kinds of basalt, &c., as in the neighbourhood of Vesuvius, in Saxony, Bohemia, Silesia, Hungary, &c. It occurs in large spheroidal masses, which are not pebbles, mixed with augite, in a rock called *traptuff*, at Kapfenstein, in Lower Stiria, and in Hessia. It is used as a gem of inferior value.

OLLA PODRIDA; a favourite dish of the Spaniards, consisting of several kinds of meat cut up and stewed together.—The same name is also given to a vase of odoriferous flowers and herbs. (See *Pot pourri.*) It is often used, metaphorically, to denote a medley.

OLMUTZ, or HOLOMAUC; a city of Moravia, with 12,890 inhabitants, situated between two branches of the March, thirty-five miles N. of Brunn; lat. 49° 32′ N.; lon. 17° 9′ E. It is surrounded by extensive fortifications, and contains several religious, literary, and charitable institutions. It is an archiepiscopal see. Olmutz was formerly the capital of Moravia, was captured by the Swedes in 1642, and besieged by the Prussians, without success, in 1758. Lafayette was confined, for a long time, in the prisons of the citadel. See *Lafayette.*

OLYMPIA; a town in ancient Elis (western Morea, near the town of Lagganico,) where Peregrinus Proteus burned himself, to show to the Greeks a new sight. (See *Peregrinus Porteus.*) It is now in ruins. The little plain of Antilala, which measures but an English mile and a quarter, from east to west, contains traces of buildings, which Fauvel and Pouqueville consider the remains of the Hippodrome, where the triumphal garland was once awarded. This little plain is bounded on the east by the steep banks of the Cladeus; on the west of the river lies Miracca; on the north are hills; and, on the south, the Alpheus surrounds the valley. Between the Typæon—a steep, rocky mountain—and the Alpheus, to which it reaches, lie the ruins, which have been taken for those of the Hippodrome, though Stanhope does not acknowledge them as such. Towards the south, enclosed by the Altis, lies the *stadium*, upon a low and now marshy spot, on the mountain. Pisa was situated six leagues from Olympia; and, from the agreement of the name of a fountain near Miracca, called *Potistirum*, with *Potistira*, the name of a fountain near Pisa, we appear justified in regarding the fragments of architecture at Miracca as the ruins of Pisa. So few are the remains of that Olympia, where, from the time of Chorœbus, the names of the conquerors were recorded for posterity with the most scrupulous exactness! The statue of Olympian Jupiter is treated of in a work of Siebenkees (Tubingen, 1795), and in Quatremère de Quincy's *Jupiter Olympien* (Paris, 1816, folio). The diligent investigations of the learned John Spencer Stanhope (see his *Olympia, Topography illustrative of the actual State of the Plain of Olympia, and of the Ruins of the City of Elis*, London, 1824, with sixteen beautifully engraved plans and views, after designs by Demint), appear to have thrown some light upon the field which bears the ruins of Olympia.

OLYMPIAD; a period, connected with the celebration of the Olympic games, by which the Greeks computed time. (See *Olympic Games.*) The Olympiad from which they began to reckon, was, according to Petavius, 777; according to Usher, 772; and according to Calvisius, 774 B. C. Gatterer, and most of the moderns, call it 776. The last Olympiad (the 304th) fell on the 440th year of the Christian era. The interval between two Olympiads was about four of our years, or a Greek tetraetris of forty-eight moons, and two intercalary months. The Olympiads were first named after the conquerors in the games;

but many errors might arise from this method, especially if there was no opportunity of immediately consulting the records at Olympia ; therefore, in after times, they were otherwise distinguished : for instance, in Athens, to the name of the conqueror was added the name of the ruling archon ; at Lacedæmon, the name of the ephori ; at Argos, the name of the priestess of Juno ; at Delphi, the name of the Pythia, &c. The records, thus made and kept under the superintendence of the magistrates, were preserved among the archives of each state, where every one might consult them. In later times, private persons took copies. Unfortunately, none have remained to us.

OLYMPIAS, a celebrated woman, daughter of Neoptolemus king of Epirus, married Philip, king of Macedonia, by whom she had Alexander the Great. Her haughtiness, and, more probably, her infidelity, led Philip to repudiate her, and to marry Cleopatra, the niece of king Attalus. The murder of Philip, which soon followed this disgrace, some have attributed to the intrigues of Olympias. Alexander treated her with respect, but did not allow her to take part in the government. Antipater succeeded Alexander in the government of Macedonia, and, on his own death, left the administration of the country to Polysperchon, who, to confirm his power, recalled Olympias from Epirus, whither she had fled, and confided to her the guardianship of the young son of Alexander. She now cruelly put to death Aridæus, son of Philip, with his wife Eurydice, as also Nicanor, the brother of Cassander, with one hundred leading men of Macedon, who were inimical to her interest. Such barbarities did not long remain unpunished. Cassander, son of Antipater, besieged her in Pydna, where she had retired with the remains of her family. She was obliged to surrender, after an obstinate siege, and was put to death.

OLYMPIC GAMES. The Olympic games were the most solemn and celebrated amongst the four sacred games of the Greeks, which were national festivals, and closely united the different Greek tribes. The name originated from the consecrated place Olympia, where they were celebrated, or from Jupiter Olympius, who had a famous temple on this spot. The Olympian plain is now called *Antilala*, being opposite the town of Lala. According to some traditions, Jupiter himself, after his victory over the Titans, founded these games ; Mars gained the first prize in boxing ; and Apollo overcame Mercury in the race. According to others Pelops founded them in honour of Jupiter. Others, again, ascribe them to the Argonauts. One of the *dactyli* (priests of Cybele, from mount Ida, whom Rhea, the wife of Saturn, had called from Crete to Elis, for the education of her son Jupiter), named Hercules, is also said to have founded them when he, with his four brothers (Pæoneus, Ida, Jasius, and Epimedes), proceeded from Crete to Elis. These four younger brothers contended with each other for the prize in racing Hercules crowned the victor with a wreath of olives, which was taken from a peculiarly beautiful olive tree, transplanted from the land of the Hyperboreans to the holy plain, near Pisa. This was afterwards alone employed for the victors' wreaths. Certain it is that, in the earliest times of Greece, games (probably of a religious nature) were celebrated in the neighbourhood of Pisa. They were several times interrupted and renewed ; the first time by Iphitus, prince of Elis (884 B. C.); the second time by Chorœbus (776 or 777), from which time the Olympiads are dated. At the commencement, the inhabitants of Pisa had the superintendence of the games. But after Pisa had been destroyed by the Eleans, the latter undertook the superintendence, which they retained with few interruptions. They, also, were the umpires, whose number was not always the same. A solemn oath compelled them to the strictest impartiality. Officers were appointed to preserve order. From all parts, spectators streamed to Olympia, to attend the games. However, the priestesses of Ceres excepted, only men were permitted to be present. Females who violated this law were thrown from a rock. The games always commenced on the 11th of the month Hecatombæon (which nearly corresponds with our July), and continued five days. The competitors prepared themselves, during ten months previous, at the gymnasium at Elis. During the last thirty days, the exercises were conducted with as much regularity as at the games themselves. The festival began in the evening, with solemn sacrifices, and the games were commenced the next day at daybreak. These consisted in races on horseback and on foot, in leaping, throwing the discus, wrestling, boxing: musical and poetical contests concluded the whole. The honour of having gained a victory in the Olympic games was very great ; it extended from the victor to his country, which was proud of owning him. The magnificence of the temple of Olympia has been destroyed, partly in consequence of the political decay of this country, partly by earthquakes. For an animated description of the Olympic games, see Barthélemy's *Jeune Anacharsis*.

OLYMPUS. Several mountains had, among the ancients, the name of *Olympus*. The most celebrated of them was situated in Thessaly, and is now called *Lacha*. The earliest Greeks looked upon it as the highest of all mountains, and as the central point of the earth's surface. It was the mountain of heaven, or of the gods, and the gods of Homer dwelt on its summit. Over its top there was supposed to be an opening into the metallic dome of heaven, which rested upon mountain-pillars, at the circumference of the earth. In after times, when the ideas of men respecting the universe and the gods were enlarged, the supreme beings were said to reside in the exterior sphere of the heavens, revolving round the space which embraced the planets ; and this new abode of the gods, above the firmament of heaven, received the name of *Olympus*. Besides the opening at the top of the mountain, there were two gates in this celestial dome, which met the earth's circumference, one in the east, the other in the west, through which the sun and the night, with their train, ascended from the ocean into the heavens, and returned again. The gods themselves were called, from their dwelling-place, whether upon earth or in heaven, *Olympian* gods, and, as such, formed a body, of which Jupiter was the head. The twelve great gods composed the council of elders in Olympus, and the others, collectively, formed the general assembly. They did not dwell together in a single palace, but separate, in several, built upon the different tops of the many-peaked Olympus. At the highest summit stood the palace of Jupiter, where all assemblies and feasts were held in a large hall. From thence he could look down upon the earth, fill the heavens with clouds, and hurl his thunderbolts.

OMAN. See *Arabia*.

OMAR I., successor of Abubeker, and second caliph of the Mussulmans after Mohammed, also father-in-law of the prophet, began his reign A. D. 634, and is conspicuous among the conquerors who have desolated the face of the earth. His first expedition was against Damascus, capital of Syria ; he drove the Greeks from this province and from Phœnicia. He took Jerusalem in the year 636, after a difficult siege. He entered the city upon a camel, laden with two bags, one of which contained fruit, and the other corn, which constituted all his provisions. A wooden platter was his only furniture ; the earth was his seat. As the capitulation of Jerusalem was the model upon which the Mussulmans dictated many others, we will mention some of the chief articles. "The inhabitants shall retain their lives, their property, and their churches; but they shall build no new churches, nor place crosses upon those which they already have; they shall not ring the bells, but they are allowed to toll them. When a Mussulman travels through the city, they shall offer him hospitality for three days. They shall convert no one from Mohammedanism, nor shall they prevent their relations from embracing it. They shall use neither the language, nor the dress, nor the name of Mohammedans. They shall neither bear arms, nor sell wine; shall remain faithful to the caliph, and regularly pay their taxes." Omar's generals invaded Persia, defeated the army of Yezdegerd, and conquered the capital and kingdom. Amru, one of his generals, defeated the troops of the emperor Heraclius, near Antioch, in 638; Memphis and Alexandria surrendered; all Egypt and a part of Libya were conquered from the Romans. The story that the royal library at Alexandria was burned by order of Omar, has been of late questioned, but the probabilities seem to be in favour of its truth. The Mussulmans pursued their conquests far into Africa, but Omar did not live long to enjoy his glory. In the year 643, at the age of sixty-three, he was mortally wounded, with a knife, by a Persian slave. The nobles asked him to appoint a successor; but he refused, and especially rejected, with earnestness, the proposition of naming his son. "It is enough," said he, "that one out of my family has been forced to bear this burden." The caliphate thus became elective. (See *Caliph.*) Mohammedanism has never had a more virtuous and zealous apostle; he observed, strictly, all the precepts of the Koran, and was celebrated for his justice and clemency. He founded the city of Cairo, conquered 36,000 cities or castles, destroyed 4000 temples and churches, and built 1400 mosques. Omar is distinguished for having established the era of the Hegira. (q. v.) Mohammed had the highest esteem for Omar. He said that if God had wished to give another prophet to the world, his choice would have fallen upon Omar. He made nine times the pilgrimage to Mecca.

OMBROMETER. See *Rain-Gauge.*

OMEGA (*Greek*, signifying *great o*); the name for the Greek long *o*. It was the last letter in the Greek alphabet, as alpha was the first; and from the expression in Revelation (c. i. v. 8), "I am Alpha and Omega, the beginning and the ending, saith the Lord, which is, and which was, and which is to come, the Almighty," the signs of alpha and omega, (that is, Α Ω) became with the Christians symbolical hieroglyphics. Inscriptions (for instance, on tombstones, public documents, &c.) very often began with these two letters, meaning, "In the name of God;" as we find, to this day, treaties between Christian powers on the European continent beginning with the words "In the name of the Holy and Indivisible Trinity;" and we have seen, in the interior of Germany, bills of lading beginning with the words "In the name of God." The two Greek letters, as might be supposed, were believed to have great magical powers, and it was probably owing to usages that prevailed in the times of alchemy, that German physicians were accustomed to begin their prescriptions with Α Ω.

OMENS; certain accidental circumstances, which were once thought to predict good or evil. They were, 1. some bodily affection or emotion of the mind; 2. they came from outward objects; 3. they consisted in certain significant words. Among the first class of omens were spots upon the body, sudden restlessness and fear, especially an involuntary tremour in body and mind, palpitation of the heart, trembling of the eyes, or any other nervous affection, sneezing, &c. Among outward signs, a sudden light diffused through the house, or appearing in any place, was a good omen, for it was thought to indicate the presence of a deity. On the other hand, it was a bad omen if any thing strange happened to the images of the gods. Ominous words were lucky or unlucky, according to their signification and accidental relation. Such an omen was effectual only when it made an impression on the hearer. To avert an ill omen, a stone was sometimes thrown at whatever portended evil, or the ominous animal was killed, that the prediction of evil might be turned upon him. Words of ill omen were thrown back on the person who spoke them, by the expression, "On thine own head." There were also peculiar magic ceremonies to avert portended evil. A piece of thorny or barren wood was burned to ashes, and thrown into a brook, or into the sea, upon the occurrence of a bad omen. It was the general custom for people, when evil omens occurred, to leave the occupation in which they were engaged, to be resumed at a more favourable opportunity.

OMER, St; a city in the northern part of France, department Pas-de Calais, strongly fortified, and containing 20,000 inhabitants, almost all Flemish. The cathedral is a fine Gothic building, in which are seen a descent from the cross by Rubens, and the tomb of St Omer. The English college, formerly celebrated as the place of education for the English and Irish Catholics, is now occupied as a military hospital. Lat. 50° 44′ N.; lon. 2° 15′ E.

OMMEGANCK; born in 1755; one of the most celebrated Dutch landscape painters, whose works are distinguished for good taste, and for freshness and warmth of colouring. He died at Antwerp, January 18, 1826.

OMMIADES. See *Caliph.*

OMNIBUS; a word first used in France for long carriages, which ply between different parts of the city. The term is derived from the dative plural of the Latin adjective, *Omnes*, all; *i. e. for all;* the carriages being adapted for general convenience, without distinction of seats. Omnibuses are now common in every large town in Britain.

OMNIUM; a term in use among stockbrokers and speculators in the funds, to express the whole of the articles which the subscribers to a loan receive from government. Thus, if the subscribers, according to their agreement with government, are to have, for every hundred pounds advanced, a certain sum in 3 per cent. consols, a further sum in 4 per cents., and a proportion of the long annuities, the blank receipts which they receive for making the instalments on the several articles, are, when disposed of independently of each other, as the 3 per cent. consols only, called *scrip* (a contraction of *subscriptions*); when the receipts are sold together as originally received, they are usually called *omnium*. As the omnium of every loan is the subject of extensive speculations, it generally is liable to considerable variations with respect to its current price, sometimes selling at a high premium, at other times at a discount, according to the circumstances which take place between the agreement for the loan and the day fixed for paying the last instalment.

OMPHALE; daughter of the Lydian king Jardanus, and wife of Tmolus, after whose death she administered the government. Hercules was sold to her for a slave by Mercury, and performed some remarkable exploits in her service. Omphale rewarded him by submitting to his embraces, and bore him a son. Hercules was so enamoured of her, that, to please her, he assumed the garments of a female, adorned his fingers with gold rings, had his hair curled, and spun among her female slaves, while she wore the lion's skin, and wielded the club. Omphale governed with great severity, and was no less licentious and extravagant than cruel.

OMS. See *Cerberus.*

ON. See *Heliopolis.*

ON DIT; a French term signifying *people say;* hence often used to designate a flying rumour. The plural *les on dits* is used.

ONEIDA; a lake of New York, twenty miles long. From its west end flows Oneida river, which joins with Seneca river, to form Oswego river, flowing into lake Ontaria. Oneida lake abounds with fish, such as salmon, trout, salmon-trout, Oswego bass, pike, and catfish. The lands around this lake are very rich, but rather low and level.

ONION *(allium)*; a genus of plants including, besides the common onion, the echalote, garlic, and leek. *(See these three articles.)* The species of *allium* are herbaceous plants, with biennial or perennial bulbous roots. Their leaves are flat, or cylindrical, and fistulous, and sheathing at base. The flowers are disposed in simple umbels, more or less dense, at the summit of the stems. The calyx is deeply parted into six equal divisions; there is no corolla, and the stamens are six in number; the capsule consists of three cells, each containing several seeds. In the place of the flowers there are frequently developed, in certain species, small bulbs, which, if planted, will reproduce the vegetable. About sixty species are known. The onion proper *(A. cepa)* is abundantly cultivated throughout Europe and in the United States of America. The stem is three or four feet high, inflated, and terminated by a dense globose head of reddish flowers; the leaves are radical, cylindrical and hollow. Its use as an alimentary plant is well known. The red variety is more acrid than the white, and both become essentially milder in warm climates. The onion requires a rich and rather moist soil.

ONOMATOPŒIA (ὀνοματοποιΐα; ὀνομα, name, ποιεω, to make); the formation of words in such a manner that the sound shall imitate the sense. Thus, in the case of sounds, the words *buzz, crush, roar,* are evidently formed to imitate the sounds themselves; sometimes the word expressing an object is formed to imitate the sound produced by that object. See *Language.*

ONONDAGA; a post-township and capital of Onondaga county, New York, 134 miles west-northwest of Albany, and fifty west of Utica. Its extent is nine miles by ten. A broad valley, of exuberant fertility, extends north and south through the eastern part, bounded by high, swelling ridges on each side. Through this valley of rich alluvion, called *Onondaga Hollow,* flows Onondaga creek, northward to Onondaga lake, in the town of Salina. The whole township of Onondaga contained, in 1831, 5668 inhabitants, and seems not to be rapidly increasing. The post-borough of Onondaga, the seat of the county buildings, is situated on a delightful eminence. The post-village of Onondaga Hollow is about one mile east of the court-house. It has an arsenal belonging to the state, and many mechanical establishments. Onondaga Castle is the chief town of the remnant of the Onondaga tribe of Indians. It is three miles south of the village of Onondaga Hollow, and contains about fifty Indian houses, and about 140 persons. Their houses are built of hewn logs. They annually receive 1000 dollars from the state of New York.

ONTARIO; one of the five great lakes which separate Canada from the United States. It is situated between 43° and 44° N. lat., and 76° and 80° W. lon. Its form is elliptical, and a central line drawn from its south-west to its north-east extremity measures 190 miles. Its greatest breadth is about fifty-five, and its medial breadth about forty miles. Towards the western part of the lake, it receives Niagara river; and from this point to the St Lawrence river, which flows from the north-east part of the lake, the line dividing Canada from the United States is the middle of the lake. Nearly half of lake Ontario is, therefore, in the state of New York. It is very deep, with sufficient water in every part, and has many good harbours. It is never entirely closed by ice, and is computed, from some soundings, to be 500 feet deep. If this be correct, the bottom must be considerably below the level of the Atlantic ocean. Its surface is only 231 feet above tide water at Three Rivers on the St Lawrence, and at Albany on the Hudson. Besides Niagara river, lake Ontario receives from New York the Genessee, Oswego, and Black rivers, and a large number of small streams. Among its bays, the largest are Chaumont, Sodus, Little Sodus, Teoronto, and Braddock's, on the side of the United States; Quinte, Burlington, and many large ones on the Canada side, of which our maps do not give the names. Stony and Grenadier islands are at the eastern end; and there are some around Quinte bay, in Canada. Wolfe or Grand island is at the entrance of the river St Lawrence; and the well-known Thousand islands are just below Wolfe island. Lake Ontario abounds with excellent fish of various kinds. The most celebrated of these are the Oswego bass, the salmon, trout, and salmon-trout. The shores of the lake embrace a great variety of land: the greater part of it is pretty good, with the exception of marshy ground. Along its southern border is that remarkable ridge called the *ridge road,* or *alluvial way.* See *Ridge Road.*

ONTOLOGICAL PROOF is that proof of the existence of God which is drawn from the abstract idea of his being. Something similar to this is to be found as early as the Stoic Cleanthes. But Anselm of Canterbury and Descartes chiefly developed this species of proof.

ONTOLOGY, also ONTOSOPHY; the doctrine of being; a name formerly given to that branch of metaphysics which treats of the essential qualities of things. It investigated the nature, 1. of things in general, their possibility, reality, and necessity; 2. of substance and accidence, cause, effect, and mutual operation; 3. of quantity, quality, similarity, and equality of things; 4. of space and time; and, 5. of the simple and the compound. Kant has overthrown the ontology of the ancient school.

ONYCHITES. See *Alabaster.*

ONYX. See *Quartz.*

OONALASHKA. See *Aleutian Islands.*

OOST; Dutch for *east,* corresponding to the German *Ost.* (q. v.)

OPAL occurs in small reniform, botryoidal, and stalactitic shapes, and large tuberose concretions; surface of the former smooth, of the latter rough; composition impalpable; fracture conchoidal, even. It also occurs in pseudomorphoses of carbonate of lime; fracture conchoidal, of various degrees of perfection, sometimes highly perfect; lustre vitreous, in some varieties inclining to resinous; colour white, yellow, red, brown, green, and grey; none of them lively, except some red and green ones; dark colours, owing to foreign admixtures; streak white; transparent, or translucent, sometimes only on the edges, or even opaque, if the colours be very dark; lively play of light observable in some varities; others show different colours by reflected and transmitted light; hardness below quartz, specific gravity, 2·091. The present species is treated of by many mineralogical writers under that of quartz; while others have subdivided its varieties into numerous species. The chief of these varieties, sub-species, or species, as they have been regarded by different authors, are, 1. *noble opal,* which exhibits brilliant and changeable reflections of green, blue, yellow, and red; 2. *fire opal,* which simply affords a red reflection; 3. *common opal,* whose colours are white, green, yellow, and red, but without the play of colours; 4. *semi-opal,* the varieties of which differ from those of common opal in being more opaque; 5. *wood opal,* which appears in the shape of trunks, branches, and roots of trees; 6. *hydrophane,* a variety without transparency, but assuming it if thrown into water; 7. *hyalite,* which occurs in small reniform, botryoidal, and sometimes stalactitic shapes, and is transparent; 8. *menilite,* which occurs in tuberose masses, and is opaque; 9. *siliceous sinter,* which is merely a deposit from a hot spring.—Three varieties of opal, 1. hyalite, analyzed by Bucholz, 2. precious opal, and 3. menilite, both analyzed by Klaproth, have yielded,

Silica	1. 92·00	2. 90·00.	3. 85·50.
Water	6·33.	10.	11.

The last contains, like several other varieties, a small proportion of iron, alumina, lime, and carbon. Before the blow-pipe, water is disengaged, the mineral decrepitates and becomes opaque, and shows the properties of pure silica. Opal is less frequently met with in nature than quartz. Generally it forms short, irregular veins, which, for the most part, are found in porphyry. It accompanies calcedony in the vesicular cavities of amygdaloidal rocks, and even in agate balls. Menilite is found in adhesive slate. Some varieties are met with in metalliferous veins, and in petrifactions in sandstone. Almost the only locality of precious opal known is at Czarwenitza, in Hungary, where it is found in porphyry. Lately, it has been met with in the Faroe islands, and also near Gracias a Dios, in South America. Fire opal comes from Zimapan, in Mexico. Common opal is found in large quantity in Hungary, Saxony, and the Faroe islands. An apple-green variety is found at Kohemutz, in Silesia, which is called *chloropal.* Hyalite is found in amygdaloidal rocks in Bohemia and Hungary, and also in the United States, in Georgia, lining cavities in the buhr-stone. Menilite occurs imbedded in adhesive clay at Mevil Moutant, near Paris. Wood opal is found at Kremnitz and Telkobanya, in Hungary, and in many districts of Transylvania. Precious opal is considered as a very precious gem, and is generally cut with a convex surface. Its value depends upon its size, purity, and the vivid colours which it possesses. The phenomenon of the play of colours has not hitherto been satisfactorily explained. According to Haüy, it is the consequence of fissures in the interior filled with thin films of air, which reflect coloured light, according to the law of Newton's coloured rings. If this were the fact, opal would present nothing else but a kind of iridescence, and the beauty of opal would be owing, as Haüy expresses it, only to its imperfections. But these colours often keep constant directions within single parts of the mass; and in specimens not cut in the usual convex form, but presenting even faces, it is often possible to observe distinct images reflected exactly as in the moonstone, or in corundum. The play of colours, seems, therefore, to be connected with the regular structure of the mineral.

OPERA. The opera is a musical drama. The music makes an essential part of it; and in this it is distinguished from other dramas accompanied by music. Song and music may be said to be the poetry of the opera, and, though the opera remains a drama, and never ought to lose this character, yet, as music is lyrical, the opera must be principally directed to the expression of feelings and passions. Comparatively little display of character and action can be expected from it. An opera, like every work of art, must bear the stamp of unity; one character must prevail through the whole, as the solemn and grave in Mozart's Magic Flute (though there are *naïf* passages interspersed in it,) or the glowing, vivid colouring of Figaro, or the heroic elevation of Gluck's *Alceste.* It is further necessary to give individuality of character by means of the music, and the lyrical monologues (airs, *cavatine, ariosos*) and dialogues (*duettos, terzette,* &c.) must alternate in pleasing variety. But our limits do not allow us to give a description of the various parts requisite to these exquisite productions. According as the serious or the comic character prevails in the opera, it is termed *opera seria* or *opera buffa.* There is also a style—*mezzo stilo*—between both, the limits of which it is, of course, impossible to define. *Grand opera* is the name given to that kind which is confined to music and song. The *recitativo* is an essential part of this. By *operetta* is understood a short musical drama of a light character. The Italians have a kind of musical dramas called *intermezzo.* (See *Interlude.*) The French *vaudeville* belongs to this species of compositions, but not the German melodrama, in which music, indeed, is introduced either by itself or in connexion with the dialogue, but no singing takes place.

Origin of the Italian Opera.—About the year 1594, three young noblemen of Florence, who were attached to each other by a similarity of tastes and pursuits, and a love of poetry and music, conceived the idea of reviving the chanted declamation of the Greek tragedy: they procured the poet Rinuccini to write a drama on the story of Daphne, which was set to music by Peri, the most celebrated musician of the age, assisted by count Giacomo Corsi, who, though only an amateur, was also, for the period, a good musician: the piece, like the Mask of Comus, was privately represented, and in the palace of Corsi. The interlocutors, or singers, were the author and his friends; and the orchestra of his first opera consisted but of four instruments, viz. a harpsichord, a harp, a *viol di gamba,* and lute. There was no attempt at airs; and the recitative—if such it could be called—was merely a kind of measured intonation, which would appear to us insufferably languid and monotonous; yet it caused, at the time, an extraordinary sensation, and was frequently repeated. Four years afterwards, the first public opera, entitled *Euridice,* written by the same poet, and set by the same musician, was represented at the theatre of Florence, in honour of the marriage of Mary de' Medici with Henry the Fourth of France. On this occasion, the introduction of Anacreontic stanzas, set to music, and a chorus at the end of each act, were the first imperfect indications of the airs and choruses of the modern opera. Monteverde, a Milanese musician, improved the recitative, by giving it more flow and expression; he set the opera of Ariadne, by Rinuccini, for the court of Mantua; and in the opera of Glasone, set by Cavili and Cicoguini, for the Venetians (1649,) occur the first *airs* connected in sentiment and spirit with the dialogue. According to another story of the origin of the opera, John Sulpitius, about 1486, exhibited little dramas, accompanied with music, in the market-place at Rome, and also before the pope and some cardinals. The commencement of the *opera seria* at Rome reminds us of the wagon of Thespis and his lees-besmeared company of strollers. The first performance of this kind, consisting of scenes in recitative and airs, was exhibited in a cart during the carnival of 1606, by the musician Quagliata, and four or five of his friends. The first regular serious opera performed at Naples was in 1615: it was entitled *Amor non ha Legge*. During the next half century, the opera not only did not improve, but it degenerated: it became in Italy what it was in France during the last century—a grand spectacle addressed to the eye, in which the poetry and music were the last things considered, while the scenery, mechanical illusions, and pantomime, were on the most splendid scale. As Goldoni said long afterwards of the grand opera at Paris, *C'était le paradis des yeux et l'enfer des oreilles.*—The first *opera buffa* is said to have been represented at Venice in 1624, where also the first stage for operas was erected in 1637. In 1646, the opera was transplanted to France by cardinal Mazarin. (See *France*, division, *Dramatic Poetry*, and *Art*.) In Germany, carnival plays, in which the performance consisted of singing, existed even in the times of Hans Sachs, (died 1567.) Opitz and others imitated the Italian pieces; but the first German original opera is said to have been Adam and Eve, played in 1678, in Hamburg. Some consider The Devil let Loose the first comic opera in Germany. In Sweden, the first Swedish original opera was performed in 1774. The Italian opera was introduced into England in the seventeenth century. Handel effected a revolution there, which, however, did not exert a permanent influence on the English opera. The Italian opera did not penetrate into Spain until the second half of the eighteenth century. The Italians draw the line between the *opera seria* and *opera buffa* much more distinctly than the Germans, so that the Italian *opera seria* appears almost insipid to a German; the *buffa*, on the contrary, is quite grotesque and quite national, and produces a lively effect when played by Italians.

Among the most distinguished Italian writers of operas are Apostolo Zeno, and particularly Metastasio, who, in the eighteenth century, carried the Italian opera to so great a height. Among the writers of comic operas we must mention Goldoni. Among their composers, Sacchini, Piccini, Jomelli, Cimarosa, Salieri, Paisiello, Zingarelli, Martini, Rossini, Generali, &c., are distinguished. (See Arteaga's *History of the Italian Opera*.) Among the French writers of operas are Quinault, La Fontaine, La Motte, Marmontel, Favart, Sedaine, Etienne, Jouy, Scribe, Théaulon. Among the French composers are Grétry, Monsigny, Rousseau, Dalayrac, Isouard, Boyeldieu, Catel, Méhul, and the nationalized Spontini and Cherubini. Among the English writers of operas are Addison, Gay, Fielding, Kenrick, &c. The English have no distinguished composers of operas.

The German opera, as it now exists, originated from the *operetta*, chiefly cultivated in the latter half of the eighteenth century by Weisse and Hiller. The pieces which are sung became longer and longer, so that at last they took the form of the *opera seria*; and when the *finale*, invented by the Italians, was introduced, general preference was given to that kind of opera. Spoken dialogue and song alternate in it; but in recent times, the great German composers have changed the prose dialogue also into recitative. The romantic opera is a German production, and composed of the Italian *opera seria* and *opera buffa*. Among the most perfect of the German romantic operas are the magic Flute, Don Juan, *Der Freischutz*, Oberon, &c. Some of the poets who have written for the German opera are Goethe, J. G. Jacobi, Herklots, Huber, Kotzebue, Schikaneder, Kind, Gehe, &c. The German composers are Gluck, Hasse, Mozart, Winter, Weigl, Reichardt, Kunzen, Vogler, Beethoven, Weber, Spohr, Kreutzer, &c.

OPERA GLASS, in optics; so called from its use in theatres, &c. It is sometimes called a *diagonal perspective*, from its construction. It consists of a tube about four inches long, in each side of which there is a hole exactly against the middle of a plane mirror, which reflects the rays falling upon it to the convex glass, through which they are refracted to the concave eyeglass, whence they emerge parallel to the eye at the hole in the tube. This instrument is not intended to magnify objects more than about two or three times. It is intended for viewing persons at a small distance, so that no one shall know who is observed; for the instrument points to a different object from that which is viewed; and as there is a hole on each side, it is impossible to know on which hand the object is situated which is looked at.

OPHIR; a country or city to which the Hebrews made voyages in the time of David and Solomon, bringing home gold, ivory, spices, peacocks, &c. Commentators are not agreed as to its situation, but it seems most probably to have been on the eastern coast of Africa, or in the East Indies.

OPHITES; a Gnostic sect, which rose in the second century, and held, in common with the Valentinians (see *Gnostics*), the doctrines of the two principles, of *æons*, and of the theogony therewith connected. They were peculiar in the worship of a living serpent, which they considered as the emblem of the sensual principle in man and of prudence (*sophia*). The Ophites kissed the snake, in which they honoured the tempter of Eve in paradise, on the same principle as the pagans worshipped evil deities. Hammer has explained the signification of this emblem, and its worship, in a different manner, in the *Fundgruben des Orients* (6th vol., No. 1).

OPHIUCHUS, or SERPENTARIUS, and SERPENS; one of the old constellations, which was anciently called *Æsculapius*.

OPHTHALMIA (ὀφθαλμος, eye); an inflammation of the mucous membrane, which covers the globe of the eye and of the correspondent surface of the eyelids. It is either acute or chronic. It differs very much in its exciting causes. Residence in damp or sandy countries, exposure to the sun, sudden changes of weather, are among the most usual causes. It may also be produced by the suppression of some of the usual discharges, and also by the scrofulous and venereal virus. Its characteristic marks are pain and redness. Of all diseases of the eye it is most frequent.

OPIE, JOHN, professor of painting at the royal academy, was born in 1761, in Cornwall. His father was a carpenter, and he was intended for the same occupation; but when very young, he manifested a taste for study, and a strong predilection for the arts of design. When about nineteen, he removed to London; but his pictures were not admitted into the exhibition at Somerset house till 1786. He afterwards became an academician. He published An Inquiry into the Cultivation of the Arts of Design in England, and delivered lectures at the royal institution. In 1804, he succeeded Fuseli as professor of painting, and read four lectures on painting, which have been published. He died in 1807. He holds a respectable station among British painters.

OPITZ, or OPITIUS, a celebrated German poet of the seventeenth century, born at Bunzlau, in Silesia, in 1597, published first a collection of Latin poems, entitled *Strenarum Libellus*, in 1616. The following year he became a teacher at the gymnasium of Benthem, on the Oder, and, besides poetical compositions, he published his *Aristarchus, sive de Contemptu Linguæ Teutonicæ* (4to). He then studied at Frankfort on the Oder, and, having afterwards visited many cities in Germany and Holland, he went, in 1621, to the court of the duke of Liegnitz; whence, in about a year, he removed, to become professor of philosophy and classical literature at the university of Weissenburg, then newly founded by Bethlen Gabor. The situation proving unpleasant, he soon returned to Bunzlau, and afterwards to Liegnitz. Becoming distinguished for his talents, he went to Vienna, where the emperor Ferdinand II. bestowed on him the poetical crown, and afterwards gave him letters of nobility, when he assumed the title of *von Boberfeld.* He returned to Silesia, and became secretary to the burgrave of Dohna; but, on losing his patron by death, he entered anew into the service of the duke of Liegnitz. At length he was appointed secretary and historiographer to the king of Poland, and passed the last five years of his life at Dantzic, where he died August 20, 1639. Among his works are a poem on mount Vesuvius, Silvæ, Epigrams, &c. Opitz was the creator of a new and more correct poetical style in Germany, founded on the model of the ancient classics, and of a form of versification accommodated to rules of prosody, and resting on the measure of syllables, and not their number. He was well acquainted with the ancients, and had stored his mind with useful knowledge, so that his poems, especially the larger ones, are rich in thought and invention. The language is indebted to him for new connexions and forms, greater smoothness and correctness, expressiveness, and euphony.

OPIUM; the inspissated juice of a species of poppy (*papaver somniferum*), a native, originally, of the East, but now naturalized throughout the greater part of Europe. The root of this plant is annual, giving out a stem from two to four feet high, which, as well as the leaves, is glaucous. The flowers are terminal, white or light gray, and three or four inches in diameter: in the wild plant they are provided with only four petals, but in the double varieties the petals are very numerous, and vary in colour from white to red and to deep violet, with a hundred intervening shades. The capsules contain a prodigious number of seeds. It is found in most gardens as an ornamental plant, and is, besides, cultivated extensively in many parts of Europe, but only for the sake of the oil which is obtained from the seeds. It is from the East, from different parts of the Turkish empire, and from Hindoostan, that the opium of commerce is chiefly procured. The finest opium is obtained by making longitudinal incisions in the green capsules in the evening; the milky juice which flows out is suffered to remain till the following evening to acquire consistence, when it is removed, and the process repeated. When the seeds are the sole object, the time of sowing is in the autumn, and at the end of the following July or beginning of August, the crop is ready for harvesting: before cutting off the capsules, it is better to shake them on cloths spread for the purpose; or, if this precaution is not taken, they should be removed with great care, keeping them always in an upright position until they are placed in sacks; otherwise a portion of the seed will be lost: the capsules should then be exposed to the air to complete their desiccation, and the seed, after being separated, should be kept in a dry place. The oil has an agreeable taste, and, after olive-oil, is esteemed the best for culinary purposes. In Germany and the Netherlands, it is almost the only kind used. The seeds, after being roasted and prepared in various manners, were employed by the Romans in making several sorts of cakes and dainties; and this custom is still prevalent in some parts of the north of France.

Opium is the most energetic of narcotics, and at the same time one of the most precious of all medicines, and is employed in the greatest variety of cases. It is invaluable in procuring relief from pain at all times, and is an efficient remedy in choleras, spasmodic affections, convulsions, tetanus, neuralgias, &c., &c. It is most commonly employed for the purpose of procuring sleep; but its habitual use is attended with similar, if not worse effects, than the abuse of ardent spirits. A full dose is intoxicating and exhilarating; but, if taken in large quantities, it produces dangerous and fatal effects. An emetic should be immediately resorted to in such cases. Laudanum is a liquid preparation of opium, made with alcohol, and is similar in its effects on the human system. Madden, in his travels in Turkey, &c., speaking of the opium eaters of Constantinople, whom he saw in a coffee-house frequented by them, says, "Their gestures were frightful; those who were completely under the influence of the opium talked incoherently; their features were flushed; their eyes had an unnatural brilliancy, and the general expression of their countenances was horribly wild. The effect is usually produced in two hours, and lasts four or five. The dose varies from three grains to a drachm. The debility, both moral and physical, attendant on its excitement, is terrible; the appetite is soon destroyed, and every fibre in the body trembles; the nerves of the neck become affected, and the muscles get rigid: several I have seen in this place who had wry necks and contracted fingers, but still cannot abandon the custom. They are miserable till the hour arrives for taking their daily dose."

The opium of commerce is in masses of different sizes. It is somewhat hard, of a brown colour, and a bitter, acrid, and nauseous taste. Its odour is peculiar and characteristic. It softens with a gentle heat, and, when more heated in the air, it kindles, but does not burn readily. It contains acidulous meconate of morphia, extractive matter, mucilage, fecula, resin, fixed oil, caoutchouc, a vegeto-animal substance, debris of vegetable fibres, occasionally a little sand, and small white pebbles, together with the white crystalline salt of opium, now known under the name of *narcotine.* If we treat opium first with abundance of ether, a tincture of a deep yellow shade is obtained, from which there gradually falls a powder, insoluble in water, alcohol and ether, and, when distilled, it affords a considerable quantity of ammonia. The ethereous tincture, freed from this yellowish powder, yields, on evaporation, crystals impregnated with a viscid oil, among which small masses, of more consistence, are seen to float. These are caoutchouc, which may be separated from the oil by a fine tube. The oily liquid is to be decanted, in order to insulate the crystals, which are then treated with boiling alcohol. On cooling, this affords the narcotine, slightly impregnated with caoutchouc. From this a new solution frees them completely. Hence, by this process, are eliminated four different products: 1. a fixed oil; 2. caoutchouc; 3. a vegeto-animal substance; 4. narcotine. The opium, after being thus exhausted by ether, when dissolved in water, affords solutions equally acid as ordinary opium, and which comport themselves with magnesia or ammonia, as if no ether had been applied to it. (See *Morphia.*) It is obvious, therefore, that the two crystalline bodies, narcotine and morphia, exist in opium quite independent of each other. In the eighth and ninth volumes of the Journal of Science of the Royal Institution of Great Britain, and in the first volume of the Edinburgh Philosophical Journal, are two valuable papers on the manufacture of opium. According to Orfila, a dangerous dose of opium is rather aggravated than counteracted by vinegar. The proper remedy is a powerful emetic, such as sulphate of zinc, or sulphate of copper.

OPODELDOC; a solution of soap and alcohol, with the addition of camphor and volatile oils. It is used externally against rheumatic pains, sprains, bruises, and other like complaints.

OPORTO, or PORTO, next to Lisbon the most considerable city of Portugal, is situated in the province Entre Minho e Duero, in a narrow valley, on both sides of the Duero; lat. 41° 11′ N.; lon. 8° 40′ W.; about 160 miles north of Lisbon. It contains eleven public squares, ninety churches, seventeen monasteries, fourteen hospitals, and 70,000 inhabitants. The city is distinguished for its cleanliness, and on the river there are fine quays. The harbour is excellent, and protected by a fortress: 1200 ships enter it yearly. The mouth of the river, however, is obstructed by rocks and quicksands. Oporto is the emporium for the export of Port wine, which receives its name from this city, but is chiefly produced in the province of Tras os Montes. The amount exported yearly varies from 50,000 to 70,000 pipes, of which the greatest part goes to Great Britain. (See *Port.*) The wine trade is principally in the hands of a company, chartered in 1756, which has also thirty brandy distilleries. There are about thirty British houses established in Oporto. Other articles of export are oil, sumach, linen, and oranges. The imports are woollen, cotton, and hardware manufactures, mainly from Britain; salt fish, hemp, and flax; and, from the United States, rice. The country seats in the environs, called *quintas*, are beautifully situated. The climate is cold for the latitude. Oporto derives its origin from the small place Cale, which lay on the other side of the river; the present site, being found more commodious for shipping, acquired the name of *Portus Cale;* whence the Portuguese *O Porto* (the Port); while the kingdom itself received the name of *Portugal.* Oporto was occupied by the French in 1808, and it suffered much in its commerce by the usurpation of don Miguel, many of its citizens having fallen victims to the troubles which agitated the country, or forced them to flee from it. See *Portugal.*

OPOSSUM (*didelphis*). These extraordinary animals belong to the *marsupialia,* or those quadrupeds the females of which are furnished with a pouch in the abdomen; they are peculiar to the American continent; and one, and the best known of them, is very common in the United States: this is the *D. Virginiana,* the general colour of which is whitish-gray; the whole hair is of a wool-like softness; it is short on the face and body, but long on the legs. The tail is thick and black for upwards of three inches at base, and is covered with small scales. The opossum is seldom or never to be seen in the day time, being a nocturnal and timid animal, depending far more on his natural sagacity than on his strength for his safety. His motions on the ground are awkward and clumsy; but on the branches of a tree he moves with great celerity and ease, using his tail to assist his motions. This organ is prehensile, and enables the animal to suspend himself by a branch, either when in pursuit of food, or when he wishes to descend. His usual prey is birds, some of the smaller quadrupeds, eggs, &c., though he oftentimes commits great depredations in orchards; his favourite food of this kind, however, is the persimmon, on which he becomes very fat. The flesh is good, resembling in flavour that of a young pig. The wool, especially of those killed during the winter, is very long and fine, and might be advantageously employed in many manufactures. The places in which the opossum is usually found are thick woods, where they generally dwell in the hollow of decayed trees. They are usually hunted in the autumn, after the first frosts: as soon as they perceive the approach of danger, instead of taking to flight, they lie close to the branch on which they were clinging; when they are discovered, they are taken by shaking the branch violently; they then drop to the ground, and, if the hunter is unaccompanied by dogs, they steal slowly away, and, gathering themselves into as small a compass as possible, remain perfectly quiet, as if feigning death. After remaining thus till they think themselves secure, they steal off; if, however, any sudden noise be made, they again assume their death-like position, in which they will persevere even when taken up and handled. This well-known attribute of the opossum has become a proverb, and "He is playing 'possum," is applied, in some parts of the country, to any one thought to be acting deceitfully. The female has ten to fifteen young, who are, for a long time, nourished in the pouch, and to which they resort on the appearance of any danger. When they are too large to be thus carried, they cling to the mother by twisting the extremity of their tails round the base of hers. When taken young, they are readily tamed, but are mischievous pets. Wonderful medical virtues were formerly attributed to the tail of this animal, in a great variety of cases.

OPPIAN; a Greek poet, who lived under the emperor Caracalla, in the beginning of the third century. He was a native of Cilicia, and apparently of Grecian descent. He wrote poems distinguished for elegance and sublimity; but two only of his productions are now extant, his *Halieuticon,* or five books on fishing, and four books on hunting, entitled *Cynægeticon.* Caracalla was so pleased with it, that he gave the author a piece of gold for every verse, whence the poem has been styled the "golden verses" of Oppian. He died in his thirtieth year (A. D. 213,) and his countrymen erected statues in honour of him. The best edition of his works is that of Schneider (Strasburg, 1776, 8vo; there is another by the same editor, 1813, 8vo). His *Halieutics* have been translated into English, by Jones (Oxford, 1722, 8vo).

OPPOSITION, in astronomy, is that aspect of any two heavenly bodies when they are diametrically opposite each other, or 180°, that is, a semicircle, apart. See *Aspect.*

OPPOSITION, as this word is understood in reference to the deliberative assemblies of free representative governments, is something not only wholly unknown to the ancients, but also of but recent origin. It is difficult to fix precisely the period when *opposition,* in the modern meaning of the word, began; but we shall probably not be far from the truth when we date the more regular opposition from the accession of the house of Hanover to the throne of England. There existed, indeed, before, opposing parties in England, and in other countries, but not a regular parliamentary opposition. Opposition is an indispensable ingredient of free representative governments: it is both a check and a stimulus, and it is a strong proof of the judicious organization of modern governments, in comparison to those of antiquity, that opposition has become more truly an essential part than a hostile element of government, and, laughable as the expression, "his majesty's opposition," sounded, when used, some years ago, in the British parliament, it contained a great truth; because, though the opposition may struggle against an existing administration, it contributes to the soundness and vigour of the body politic. It is impossible to make one, accustomed only to absolute governments, or those of ancient states, understand the true meaning of a modern opposition; to him, all opposition is rebellious. Nothing contributes more to form an independent and intelligent spirit in a nation, than a persevering and judicious opposition, which does not weaken its efficacy by blindly resisting what is good. A full discussion of this subject belongs to a systematic work on governments; and well would it be, were there an author to treat all the parts of free governments with a sagaciousness like that of the immortal Florentine, in his development of absolute power. Great Britain, France, and the United States, are the only countries in which *opposition*, in the true meaning of the word, as yet exists.

OPS. See *Cybele*.

OPTICS; the science of vision, which treats of the changes which light undergoes, in its qualities, or in its duration, when passing through bodies of different kinds and shapes, when reflected from their surfaces, or when moving past them at short distances. For an account of the nature and more general properties of light, see the article under that word.

History.—The ancients seem to have been very early acquainted with metallic mirrors, and we find burning glasses mentioned in the Comedy of the Clouds, by Aristophanes, which was enacted during the fifth century before the Christian era. Pythagoras and Empedocles, who flourished in the same century, both speculated on the theory of vision; the former maintaining, that objects become visible in consequence of particles, from the luminous objects, entering the pupil of the eye: the latter, on the other hand, asserted, that objects become visible by means of particles emitted from the eye, and striking them. It is not a little remarkable that Plato, who flourished about a century after, held the same opinion as Empedocles. The Platonic philosophers, however, taught two important laws in optics, *i. e.*, that light, from whatever source it may issue, is propagated in straight lines, and also, that the angle of incidence is equal to the angle of reflection. Aristotle observed, pretty accurately, the phenomena of halos, parhelia, and the rainbow. Archimedes destroyed the Roman fleet by fire, from the collected influence of the sun's rays reflected from a great number of plane mirrors. The first writer on optics on record, was the illustrious geometer, Euclid, who flourished about the year 300 B. C.; but, though from the hand of so great a man, the work contains much false reasoning. Seneca, about the middle of the first century of the Christian era, observed the effect of a glass-bottle filled with water, in magnifying objects, and also the effect of prisms in colouring objects seen through them. He also observed the magnifying power of concave mirrors. Claudius Ptolemy, the celebrated astronomer of Alexandria, was the greatest optician of the ancients. He lived about the middle of the second century, and two copies of his work still exist,—one in the Bodleian library at Oxford, the other in the Royal library at Paris. In this work, he treats of the theory of vision, or the refraction and reflection of light, of mirrors and lenses; and he treated the theory of astronomical refraction with more justice than any other astronomer before the time of Cassini. Nothing more was done by way of advancing optical science until the beginning of the tenth century, when one Al Farabius, an Arabian, produced a work on Perspective; but the only Arabian optician, whose work has come down to us, is that of Alhazen, who lived about the end of the eleventh century. In his work, he gives a very lucid account of the theory of vision, and a description of the eye; investigates the properties of seven different forms of mirror, and derives theorems for determining the relative distances of the object, image, and eye. In 1270, one Vitello, a Pole, drew up an elaborate work on optics, in which he arranged the results of the labours of his predecessors in a methodical order, and added much that was new of his own. Roger Bacon, who lived during the greater part of the thirteenth century, treats largely of optics in his *Opus Majus*, where he clearly describes spectacles and the single microscope, and has, by several historians, been considered as the inventor of these, as well as the telescope. Muschenbroek states, that it is inscribed on the tomb of Salvinus Armatus, a Florentine nobleman, who died in 1317, that he was the inventor of spectacles. Considerable additions were made to the science of optics by Maurolycus of Messina, who published a work in 1525, under the title of *Theoremata de lumine et umbra*, which contains many original and profound investigations of the theory of light. To the contemporary of Maurolycus, John Baptista Porta, we are, in all likelihood, indebted for the invention of the camera obscura, and some also claim for him the invention of the telescope, which last honour is also claimed for Roger Bacon, and for Thomas Digges, by his son Leonard, who published a work entitled *Pantometria*, (London, 1571), claiming with great plausibility the honour of the invention to his father. The invention of the telescope is ascribed by Descartes to James Metius, a citizen of Alkmaer, in Holland, about the year 1600. Strong evidence has been given that telescopes were made in 1609, by Zaharius Jansen of Middleburg. Early in the seventeenth century, M. A. de Dominis, archbishop of Spalatra, by a happy experiment with a glass globe, discovered the true theory of the rainbow, that it was produced by one reflection and two refractions. Galileo, without any knowledge of the construction of the telescope of Jansen, formed one for himself at Padua, in 1609, and constructed instruments of the form which generally goes by his name, *i. e.* those composed of a convex object glass and concave eyeglass, which had a magnifying power of 1000 times. The illustrious Kepler, in a work published in 1611, explained the theory of the telescope, and proposed the employment of one or more convex eyeglasses, a proposition which was first duly appreciated and put in practice by Father Sheiner; and Father Reitz effected a still farther improvement by employing an eye piece composed of three or four convex lenses, and is in fact the inventor of the common refracting telescope. The doctrine of refraction was investigated by Kepler, and from his experiments he obtained many important results; he also discovered many of the theorems for the determination of the foci of lenses, and his reasonings on the theory of vision are remarkable in the history of optics for their profoundness and accuracy. From the striking facts elicited by the experiments of Kepler, it is remarkable that the law of refraction escaped his penetrating mind; the honour of the discovery of this law was reserved for professor Snellius of Leyden. The law of refraction is that the sine of the angle of incidence bears to the sine of the angle of refraction a constant ratio in the same media. To Descartes, who flourished during the first half of the seventeenth century, much is due for his contributions to optical science. Descartes showed that since the spherical form of lenses failed to concentrate the rays in one point, we must look for a perfect lens in one whose curve is one of the conic sections; and he, therefore, proposed the employment of hyperbolic and elliptical lenses in the construction of telescopes. Such lenses never have been formed, and it is more than likely never will; nor is it at all probable that the reflecting telescope has derived any advantage from the multifarious attempts that have been made to give the speculæ a parabolic form. The mechanical operations necessary to produce such curves seem utterly impracticable; and even if they could be produced in lenses, they would only destroy the caustic curve, but would not compensate for the far greater evil, the different refrangibility of the rays of light. To Descartes is due the honour of first explaining the true theory of the rainbow, and accounting satisfactorily for the formation of the double bow. It is lamentable to think that the brilliant genius of this great man is tarnished with the want of ingenuousness; that the historian of science must have it to tell that in more than one instance he passed over in silence the discoveries of his predecessors, and even condescended to appropriate them as his own. About the same period, or a little later, a remarkable discovery was made by Erasmus Bartholinus, a Dane, who, having obtained some specimens of Iceland spar, observed the remarkable phenomena of double refraction which they exhibit. In these crystals he remarked that a double image is formed, in one of which the light follows the ordinary law of refraction, while in the other it follows an extraordinary law: (an account of his experiments will be found in the 67th No. of the Philosophical Transactions.) His experiments were carefully repeated and extended by the illustrious Huygens, who had the honour of discovering the polarization of light. To the same philosopher is due the promulgation of the undulatory theory, which was afterwards embraced by Euler, Dr Young, and most of the continental philosophers, and which has now obtained so much ground among men of science in this country as to threaten the speedy overturn of the Newtonian theory of emission. Huygens employed himself with success in the practical department of optics, and constructed telescopes, some of which were 136 feet in length. James Gregory invented the reflecting telescope, which he describes in his *Optica Promota*, published in 1663, (see his life in Chambers' Biography); but he never lived to see his invention put into operation. This was soon followed by the reflecting telescopes of Newton and Cassegrain. Gregory discovered the law of refraction in the improved form in which we now have it, and made many very accurate experiments on the refractive power of different substances; so accurate, indeed, were those experiments, that his index for water is not more than $\frac{1}{18000}$ in error. About the same time Grimaldi discovered the inflection of light, and Hook made nearly the same discovery, without knowing what had been done by Grimaldi. In the year 1676, the Danish philosopher, Roemur, from observations on the eclipses of Jupiter's satellites, made the important discovery of the motion of light, and proved that it travels over the diameter of the earth's orbit, a distance of 190,000,000 of miles in eleven minutes of time. Several important contributions were about the same time made to optical science by Tachrinhausen and Petit, more particularly as regards the investigation of caustic curves, and the structure of the eye. The greatest additions ever yet made to the science of optics were those contributed by the illustrious Newton. In 1664, when in the twenty-fourth year of his age, he commenced that brilliant series of experiments on colours, which led him to the important discovery of the different refrangibility of the rays of light. It would be impossible, in this brief view of the history of optics, to enter even into a catalogue of his discoveries in colours and the inflection of light. These are all detailed at full length in his Treatise on Optics, one of the finest works on experimental philosophy ever composed. The more important of these discoveries will be given in a subsequent section of this article. Although Huygens made experiments illustrative of the polarity of light, yet it was Newton who first suggested the idea that light had polarity.

After the discoveries of Newton, the next on record, of any importance, is that of the aberration of light, by Dr Bradley. Since the motion of light is such, that a particle of it traverses the diameter of the earth's orbit in eleven minutes, and that, during that time, the earth must have moved through a part of its orbit, it is plain that a ray of light, from a celestial body, will have reached the eye of the observer, after the object and the observer have changed places, from the instant in which the ray was emitted from the object. This is what is called the aberration of light. The invention of the achromatic telescope has been claimed for Euler and Klingensticorus; but there can be no doubt that the invention is of British origin, and that it is due to Dolland, who died in 1761, at the age of fifty-five. Euler embraced the undulatory theory of Huygens, with this addition, that he supposed the differences of colour to depend upon the differences of the rapidity of vibrations. Claraut investigated, with great ability, the theory of the achromatic telescope, in which he was followed with great success by d'Alembert, and also by the celebrated Boscovich. About 1760, Bouguer made numerous experiments, with a view to ascertain the intensity of the light emitted by different objects, and the quantity of light lost by refraction and reflection; in which interesting inquiries he was followed by that ingenious German philosopher, Lambert. Sir William Herschel commenced the construction of reflecting telescopes about the middle of last century, and erected them of greater dimensions than had ever been done before. In 1781, he constructed one of thirty feet in focal length of the great mirror; and, in 1783, he began the construction of his great telescope of forty feet, the diameter of the great speculum being four feet. Subsequent to this, he investigated the solar prismatic spectrum, and made many important discoveries. About the year 1790, Dr Blair made many valuable experiments, with a view to determine the refractive and dispersive power of various substances; and proposed the employment of fluids in the construction of achromatic telescopes. About the same time, Dr Thomas Young began to labour in the advancement of optical science. He directed his attention to the mechanism of the eye; and the results of his observations are highly valuable. He invented the optometer, an instrument for ascertaining the quantity of defect in eyes, either long or short-sighted, and, consequently, for determining the exact remedy to be adopted, in order to procure distinct vision. He also applied himself to the phenomena of colours, and of the law of interference; which last, indeed, he discovered. Dr Young adopted the undulatory theory, and applied it with the utmost perspicuity in the explanation of phenomena. Dr Ritter, of Jena, was the first who directed his attention to the chemical action of the rays of the prismatic spectrum. Dr Wollaston furnished a paper to the Transactions of the Royal society, in 1800, On double Images formed by Atmospheric Refraction; and, two years afterwards, another, exhibiting A Method of Examining Refractive and Dispersive Powers, by Prismatic Reflection. It was the same philosopher who showed that the best form for the glasses of spectacles is the meniscus, with the concave side nearest the eye. He also invented the camera lucida (q. v.). Malus, shortly after his return from the Egyptian campaign, entered vigorously upon the study of optics, and discovered the polarization of light by reflection; a most important event in the history of experimental philosophy. He found that all bodies polarize light; but that this is a maximum, at a certain angle, which is different in different bodies. The early death of Malus put a check to his brilliant career, and deprived the science of one of its brightest ornaments. His labours were, however, followed up by the researches of M. Arago and M. Biot, and, at a more recent date, by Sir David Brewster. This last mentioned philosopher, whose discoveries have enriched various departments of the science, directed his attention to the effect of heat and compression on polarization, and on the relation which the chemical composition of bodies bears to their optical properties. He also conducted many experiments, with a view of determining the refractive powers of substances, and obtained many valuable results, particularly with regard to the gases. He invented several instruments, among which may be more particularly mentioned the kaleidoscope. The science is much indebted also to the labours of M. M. Fregnel, Fraunhofer, Berard, Dr Morchini, Sir J. W. Herschel, and others, who are still labouring in the field of discovery. Our limits will not admit of a more extended view of the history of optics. More minute particulars will be found detailed in the dissertation by Dr Thomson, accompanying this Encyclopedia.

Definitions.—By a *ray of light* is meant the motion of a single particle; and its motion is represented by a straight line. Any parcel of rays, passing from a point, is called a *pencil* of rays. By a *medium* is meant any pellucid or transparent body, which suffers light to pass through it; thus water, air, and glass, are called *media*. *Parallel rays* are such as move always at the same distance from each other. If rays continually recede from each other, they are said to *diverge;* if they continually approach towards each other, they are said to *converge*. The point at which converging rays meet is called the *focus;* the point towards which they tend, but which they are prevented from coming to, by some obstacle, is called the *imaginary focus*. When rays, after passing through one medium, on entering another medium, of different density, are bent out of their former course, and made to change their direction, they are said to be *refracted;* when they strike against a surface, and are sent back again from the surface, they are said to be *reflected*. A *lens* is glass ground into such a form as to collect or disperse the rays of light which pass through it. These are of different shapes, and from thence receive different names: a *plano-convex* lens has one side flat, and the other convex; a *plano-concave* lens is flat on one side, and concave on the other; a *double convex* lens is convex on both sides; a *double concave* lens is concave on both sides; a *meniscus* is convex on one side, and concave on the other. A line passing through the centre of a lens is called its *axis*.

Of Refraction.—Although a ray of light will always move in the same straight line, when it is not interrupted, yet every person knows, that when light falls upon a drop of water, or a piece of glass, or a bottle containing any fluid which allows the light to pass, it does not reach the eye, or illuminate a piece of paper placed behind these bodies, in the same manner as before they were put in its way. This obviously arises from the direction of the light being changed, by some power which resides in the bodies. The explanation of the law, or rule, by which this change in the direction of a ray takes place, constitutes that part of the science of optics called *dioptrics*, from two Greek words, one of which signifies *through*, and the other *to see*, because the bodies which produce this change are those through which we can *see*, or through which light passes. If the rays of light, after passing through a medium, enter another of a different density, perpendicular to its surface, they proceed through this medium in their original direction. But if they enter obliquely to the surface of a medium, either denser or rarer than what they moved in before, they are made to change their direction in passing through that medium. If the medium they enter be denser, they move through it in a direction nearer to the perpendicular drawn to its surface. On the contrary, when light passes out of a denser into a rarer medium, it moves in a direction farther from the perpendicular. This refraction is greater or less, that is, the rays are more or less bent, or turned aside from their course, as the second medium through which they pass is more or less dense than the first. To prove this in a satisfactory way, take an upright empty vessel into a darkened room, which admits but a single beam of light obliquely through a hole in a window shutter. Let the empty vessel stand on the floor, a few feet in advance of the window which admits the light, and let it be so arranged, that as the beam of light descends towards the floor, it just passes over the top of the side of the vessel next the window, and strikes the bottom on the side farthest from the window. Let the spot where it falls be marked. Now, on filling the vessel with water, the ray, instead of striking the original spot, will fall considerably nearer the side towards the window. And if we add a quantity of salt to the vessel of water, so as to form a dense solution, the point where the ray strikes the bottom will move still nearer to the window. In like manner, if we draw off the salt water, and supply its place with alcohol, the beam of light will be still more highly refracted; and oil will refract yet more than alcohol. In these experiments, if the room be filled with dust, the rays will be rendered much more visible.

Thus in fig. 1. plate LXIV. let A be the hole in the window shutter admitting the ray of light, A C, which falls obliquely upon the surface of the water in the vessel, a section of which is marked by the dark part of the figure. Were the vessel empty, then the ray of light A C would proceed onwards in the straight line A C B, and fall on the side of the vessel at the point B. But when the vessel is filled with water up to the level of C, the ray of light A C will, on the moment of its entering the water, be bended or refracted out of its original course, and proceed in the direction C H, falling on the side of the vessel at the point H, lower down than when the vessel was empty. The line D C E is perpendicular to the surface of the water in the vessel, so that, as said above, the ray passing out of the rarer medium, the air, into the denser, the water, is refracted near to the perpendicular. Again, if a bright object, such as a silver coin, be placed in the vessel of water at H, a ray of light proceeding from it will proceed first in the direction H C, but having arrived at the surface of the water, it will, on entering the rarer medium, the air, take the direction C A, more inclined from the perpendicular. By moving the coin farther up to the point B, the ray will proceed in the direction B C, but, after passing into the air, will take a direction farther from the perpendicular than the line B C A, and arrive at the circumference of the circle somewhere below the point A, so that the angle of incidence increases and decreases, as the angle of refraction increases or decreases, but not in equal proportion. But if we measure the lines A F and H G, which are the sines of these angles, we shall find that they bear a constant proportion, whatever be the angle. Thus, if the ray pass out of water into air, as we have supposed, and the line H G be measured, as also the line A F, then H G will be to A F as 1 is to 1·33, whatever be the angle; if the dense medium be glass, instead of water, then H G will be to A F in the constant proportion of 1 to 1·5, whatever be the angle. Now, the sine of the angle of incidence being always regarded as one, the relative refractive powers of water and glass will be as the number 1·33 to 1·5, and a table of such numbers showing the lengths of the sines of the angle of incidence, the length of the sine of the angle of refraction, being always regarded as one, is called a table of refractive powers, and the numbers 1·33, 1·5, &c., are denominated the indices of refraction. The following is a specimen of such tables:—

Substance.	*Index of Refraction.*
Chromate of lead	2·974
Diamond	2·755
Phosphorus	2·224
Glass (lead 3 flint 1)	2·028
(lead 2, sand 1)	1·987
Flint glass	1·605
Copal	1·549
Crown glass	1·525
Dutch plate glass	1·517
Oil of turpentine	1·475
Sulphuric acid	1·440
Alcohol	1·37
Water	1·33

Although, in most cases, there is a connexion between the refractive power and the density of bodies, yet refraction does not invariably increase with their density. In the case of oily substances and inflammable bodies, such as hydrogen, phosphorus, sulphur, diamond, bees' wax, amber, spirit of turpentine, linseed oil, olive oil, camphor, their refractive powers are from two to seven times greater, in respect to their density, than those of most other substances. Sir Isaac Newton observed this fact with respect to the last five substances, which, he says, are "fat, sulphureous, unctuous bodies," and, as he observed the same high refractive power in the diamond, he inferred that it was probably an unctuous substance coagulated. This law, however, at one time, seemed to be overturned by an observation of doctor Wollaston, that phosphorus, one of the most inflammable substances in nature, had a very low refractive power; but doctor Brewster, confiding in the truth of the law, examined the refractive power of phosphorus by forming it into prisms and lenses, and he found it to be nearly as high as diamond, and fully twice that of diamond compared with its density—an observation which re-established and extended the general principle respecting the refractive power of inflammable substances. In fig. 2 we have represented side sections of the most common kinds of lenses, or optical glasses. *f g* is a line drawn through their centre; *a* represents a *plano-convex* lens, being plane on the one side and convex on the other; *b* is a *plano-concave*, being plane on the one side and concave on the other; *c* is a double convex lens, or convex on both sides; *d* is a double concave lens, or one with two concave sides; *e* is a *concavo-convex* or *meniscus* lens, being concave on the one side and convex on the other. We now proceed to show the action of these lenses in refracting light, and first we shall explain the effect of the plano-convex lens.

In fig. 3 we have represented a plano-convex lens with the parallel rays *a c*, *b n*, *m d*, falling upon its convex surface. Now, not one of those rays, excepting the middle one *b n*, falls perpendicularly upon the surface of the glass, but that ray will pass directly on in the straight line *b n* C without changing its course. The rays *a c* and *m d* fall obliquely, and will therefore be refracted in contrary directions, and meet in the point C. So will all the other rays, excepting the middle one, which never deviates from its original course, but meets them in the point C. The point C, at which the rays meet, can be shown both by geometry and experiment, to be in the circumference of the circle of which the curvature of the lens forms a part. The point C is called the focus of the lens. Had the other side been also curved, the effect of refraction would have been still greater, for then the rays would have passed out of the glass more obliquely than if it had been plane. In fig. 4 we have shown two convex glasses. Suppose the parallel rays A B, fig. 4, fall upon the lens D E, which is doubly convex, they will be converged into the focus *f*, which is situated in the centre of the circle, whose radius is the same as that of the curves of the surfaces. The same holds of the lens F G, upon which the parallel rays *b c* fall. We are supposing that the surfaces of the lens are of equal curvature, but when they are not, the distance of the focus from the centre of the circle will be found by using this simple proportion—as the sum of the radii of both curves is to the radius of either, so is double the radius of the other to the distance of the focus from the middle point; thus, if the one radius be 4 and the other 3 inches, then $3 + 4 = 7$ and $7 : 4 :: 6 : 3\frac{3}{7}$ inches. These remarks, respecting the place of the focus, only hold true when the rays which fall on the lens are parallel; when they are not, the place of the focus will be nearer to or farther from the lens, according as the rays are convergent or divergent before they reach the surface of the glass. Thus, in fig. 5, the rays before they reach the lens are convergent, and would meet in a point on the other side of the lens, even if it were not interposed; but the effect of the lens is to converge the rays, and this added to the natural convergence, which they possess before they reach the lens, will cause them to converge sooner after they pass through it, than if they had been parallel; so that, instead of meeting in the point *f*, which is the centre of the circle of curvature, and which would have been the focus had the rays been previously parallel, they meet in the point *g* nearer to the lens, which point is therefore the focus. On the other hand, if the rays proceed from an object *x* which is near the lens, and diverge before they meet it, this divergence will partly destroy the converging power of the lens, and the rays will not meet so soon after passing through it as if they had been previously parallel; they will meet in a point *g*, fig. 6, beyond the centre of curvature *f* of the lens. Where the rays meet, or in the focus of the convex lens, they form an inverted image of any object, the rays of light proceeding from which pass through it, for at that point the rays cross each other. Let *a b c*, fig. 7, represent an arrow placed in the front, and beyond the focus *g* of a double convex lens *d e f*, some rays will flow from every point of the arrow, and fall upon the lens: but we shall regard only those which flow from the ends *a* and *c*, and the middle point *b*. From the point *a* the rays *a d*, *a e*, and *a f* issue, and will be refracted by the lens, and meet in A. The rays which come from the middle point *b* will diverge, and passing through the lens will meet in the point B and the rays which are emitted from *c* will be converged into the point *c* at the top of the image which is formed in the focus of the lens. This may be easily proved by experiment. Hold a convex lens at a distance from the window, and place behind it a piece of paper, exactly in the focus, it will be found that a distinct image of the window and the objects beyond it will be formed on the paper, but the image will be inverted, or the houses and trees will appear at the top instead of the bottom.

The action of a concave lens on rays of light is quite different from that of a convex. If parallel rays fall upon a concave lens, they will diverge after refraction, and continue to deviate farther from one another the farther they proceed. The form of the concave lens being the reverse of the convex, its effect may easily be conceived to be the reverse. In fig. 8, A B represents a concave lens with parallel rays entering it from the points *a b c*, &c.; these rays will, after passing through it, diverge in the directions *h n m s,* &c. Thus the ray *a*, after being refracted, will go on in the direction *g h*, and the *d* will go on in the opposite direction *r s*, and so of the rest. If all these rays *g h, r s,* &c., were traced back to the point, where, if they continued the same direction, they would meet, that point would be found in *x*, which is the centre of the circle which is of the same curvature as the lens. This point *x* is called the *virtual* or *imaginary* focus. The imaginary focus of a concave lens is analogous in distance to the focus of a convex lens, for when the lens is double concave, then the focus is in the centre of the circle; when it is plano-concave it is double that distance, or in the circumference when the rays are parallel. When the rays diverge before they meet the lens, then this will add to the divergence after refraction, and the imaginary focus will be nearer to the lens than the centre of curvature; on the other hand, if the rays before refraction be convergent, then will the divergence after refraction be so much less, and the focus proportionally more distant.

It is of importance to determine the image formed by a lens, the radius of curvature being known, and also the distance of the object whose rays are refracted. Multiply the distance of the focus (for parallel rays) by the distance of the object, and divide by the difference of these two quantities, the quotient is the distance of the image from the lens; thus, if the focal distance of the lens be six inches, and the distance of the object twelve, then the distance of the image will be twelve inches, if the focus be the same, and the distance of the object eight, then the distance of the image is twenty-four inches.

Of Reflection.—When light falls upon a body, a portion of it is thrown back, or reflected from its surface, according to a regular law, the explanation of which constitutes that branch of optics called *catoptrics*, a word derived from two Greek words, one of which signifies *from*, or *against*, and the other *to see*, because things are seen by light reflected from bodies. When a ray of light falls upon any body, it is reflected so that the angle of incidence is equal to the angle of reflection; and this is the fundamental fact upon which all the properties of mirrors depend. Let a ray of light, passing through a small hole into a dark room, be reflected from a plane mirror; at equal distances from the point of reflection, the incident and the reflected ray will be at the same height from the surface. The same is found to hold in all cases, when the rays are reflected at a curved surface, whether it be convex or concave. The rays which proceed from any remote terrestrial object, are nearly parallel at the mirror; not strictly so, but come diverging to it in several pencils, or, as it were, bundles of rays, from each point of the side of the object next the mirror; therefore they will not be converged to a point at the distance of half the radius of the mirror's concavity from its reflecting surface, but in separate points, at a greater distance from the mirror. And the nearer the object is to the mirror, the farther these points will be from it; and an inverted image of the object will be formed in it, which will seem to hang pendent in the air, and will be seen by an eye placed beyond it (with regard to the mirror), in all respects like the object, and as distinct as the object itself. If a man place himself before a large concave mirror, but farther from it than the centre of its concavity, he will see an inverted image of himself in the air, between him and the mirror, of a less size than himself; and if he hold out his hand towards the mirror, the hand of the image will come out towards his hand, and coincide with it, of an equal bulk, when his hand is in the centre of concavity, and he will imagine that he may shake hands with his image. If he reach his hand farther, the hand of the image will pass by his hand, and come between it and his body; and if he move his hand towards either side, the hand of the image will move towards the other; so that, whatever way the object moves, the image will move the contrary way. A bystander will see nothing of the image, because none of the reflected rays that form it enter his eyes. The images formed by convex specula are in positions similar to those of their objects; and those also formed by concave specula, when the object is between the surface and the principal focus: in these cases the image is only imaginary, as the reflected rays never come to the foci, from whence they seem to radiate. In all other cases of reflection from concave specula, the images are in positions contrary to those of their objects; and these images are real, for the rays, after reflection, do come to their respective foci.

These observations will be more clearly understood by reference to diagrams. That the angle of incidence is equal to the angle of reflection is proved by the fact, that in order to show the image of the body reflected from a plane mirror, it is only necessary that the mirror should be half the length of the body. Let *a b*, fig. 9, be a plane mirror, and let A be a spectator looking at the reflection of his own person. The ray A *a*, from the eye, will be reflected back in the same direction, for in this case it strikes the mirror at right angles to its surface; but the ray C *b*, from the foot, impinges upon the mirror obliquely at *b*, and is reflected in the direction *b* A, the line C *b*, the line of incidence, forming an equal angle with the line *b x*, that the line of reflection, *b* A, does. The spectator will see his image as if it were at E D. The fact of the angle of incidence being equal to the angle of reflection, affords an easy method of measuring the heights of objects. Lay a mirror upon the ground, and looking at the mirror, walk back until the image of the top of the object is seen reflected by the mirror, then use this proportion: As the distance of the foot from the mirror is to the height of the eye above the ground, so is the distance of the mirror from the bottom of the object to the height of the object. The law of reflection, we have been considering, holds equally true if the mirror be curved, *i. e.*, the angle of incidence is always equal to the angle of reflection. Thus, in a concave mirror, A B, fig. 10, let a b, C *d* e, f, be parallel rays from some distant object, these rays will be reflected so as to meet in the point C, which is the centre of curvature of the mirror; and this must of necessity be their course, for if the mirror be supposed to be made up of a great many little planes, it would be found, by making the angles of incidence and reflection equal, that all the rays would meet in the central point C, which is called the focus of the mirror. An image of the object will be formed at the point C, in the same manner as would be done in the focus of a convex lens. When the incident rays are not parallel, the point of convergence will not be in the point C, the centre of curvature; for let rays from the arrow, M E, fig. 11, fall upon the mirror A B, which is concave like the former, the rays will flow from every point of the arrow, as M, to every point in the surface of the mirror. Take the rays that flow from M to the points A, C, and B. These rays diverge before they come to the mirror, which divergence will partly destroy the convergence after reflection, and consequently the rays will not meet in C, the centre of curvature, but at a point more remote; they will meet in points, and form an inverted image of the arrow at *e m*. To find the distance of the image, the distance of the object and radius of curvature being given, multiply the object's distance by the radius, and divide the product by thrice the distance, minus the radius, the quotient is the distance of the image. The image, by reflection from a concave mirror, is always before it when the object is farther distant than the centre of curvature; but when it is nearer the image, is behind the mirror. Let A C, fig. 12, be a concave mirror, of which the centre of curvature is E. Let rays fall upon it from the arrow, $x\ z$, which is nearer to the mirror than the centre E. The image will appear as if at $x\ y\ z$, behind the mirror, erect, curved, and magnified. A convex mirror has the same effect upon the rays of light as a concave lens; it causes them to diverge. Let C D, fig. 13, be a convex mirror, and let rays fall upon it from an arrow, A P, the rays A a, and P b, fall upon it converging, and it will be reflected convergingly in the direction, a E, b E, and the image will appear as if situated at S, behind the mirror.

Colours.—The origin of colours is owing to the composition which takes place in the rays of light, each heterogeneous ray consisting of innumerable rays of different colours: this is evident from the separation that ensues in the well known experiment of the prism. That branch of optics which treats of the colours of light, of their physical properties, and of the laws according to which light is decomposed, and recomposed from its elements, is called *chromatics*, from a Greek word signifying *colour*. A ray being let into a darkened room, through a small aperture, and falling on a triangular glass prism, is, by the refraction of the prism, considerably dilated, and will exhibit, on the opposite wall, an oblong image, called a *spectrum*, variously coloured, the extremities of which are bounded by semicircles, and the sides are rectilinear. The colours are seven in number, which, however, have various shades, gradually intermixing at their juncture. Their order, beginning from the side of the refracting angle of the prism, is red, orange, yellow, green, blue, purple, violet. The obvious conclusion from this experiment is, that the several component parts of solar light have different degrees of refrangibility, and that each subsequent ray, in the order above mentioned, is more refrangible than the preceding. Their different degrees of refrangibility may be proved by admitting rays of red, orange, yellow, green, blue, indigo, and violet light, through a small aperture, into a darkened room, prepared as in the experiment for showing the refractive power of water, alcohol, &c., above described. We shall find that each colour has a different refractive power of its own, that of the red being the least, and that of the violet the greatest. The following table exhibits the result of such an experiment with water:

Red,	1·3310
Orange,	1·3317
Yellow,	1·3336
Green,	1·3358
Blue,	1·3378
Indigo,	1·3413
Violet,	1·3442

Either of these rays, on being made to traverse another prism, remains unalterable; they are, therefore, all regarded as permanent, and each one distinct from the other. This opinion is heightened by the fact, that they undergo no manner of change by reflection; for if any coloured body be placed in simplified, homogeneous light, it will always appear of the same colour as the light in which it is placed. White is compounded of all the primary colours, mixed in their due proportion; for if a solar ray be separated, by the prism, into its components, and, at a proper distance, a lens be so placed as to collect the diverging rays again into a focus, a paper, placed perpendicularly to the rays in this point, will exhibit whiteness. The same conclusion may be drawn from mixing together paints of the same colour as the parts of the spectrum, and in the same proportion; the mixture will be white, though not of a resplendent whiteness, because the colours mixed are less bright than the primary ones: this may likewise be proved by fixing pieces of cloth, of all the seven different colours, on the rim of a wheel, and whirling it round with great velocity; it will appear to be white. Though seven different colours are distinguishable in the prismatic spectrum, yet, upon a closer examination, we shall see that there are, in fact, only three original colours—red, blue, yellow; for the orange, being situated between the red and yellow, is only the mixture of these two; the green, in like manner, arises from the blue and yellow; and the violet from the blue and red. As the colour of a body, therefore, proceeds from a certain combination of the primary rays which it reflects, the combination of rays flowing from any point of an object will, when collected by a glass, exhibit the same compound colour in the corresponding point of the image. Hence appears the reason why the images, formed by glasses, have the colours of the object which they represent. When a prism of solid glass is employed for separating the rays of light, the lengths of the colours are expressed as follows: red, forty-five; orange, twenty-seven; yellow, forty; green, sixty; blue, sixty; indigo, forty-eight; violet, eighty, or 360 in all. But these spaces vary with prisms of different substances, and as they are not separated by distinct limits, but shade gradually into one another, it is almost impossible to obtain any thing like an accurate measure of their relative extents.

The experiment with the prism will be more clearly comprehended by a reference to the diagram, fig. 14. Let a pencil of rays from the sun S enter a darkened room through a hole in the window; shut $x\ y$, the natural course is along the line d; but a glass prism $a\ c$ is interposed, which will refract the whole pencil upwards, and it will be dispersed in divergent lines, forming the spectrum M n on a white wall behind the prism. From the different refrangibility of the rays of light, the red rays, which are least refrangible, will occupy one portion of the spectrum; and the violet, which are the most refrangible, another; or the other colours will occupy their respective places between these, according to their degree of refrangibility. These are the colours of the rainbow, and when we come to speak of natural phenomena, we shall show how it is produced.

Vision.—Objects presented to the eye have their images painted on the back part of the retina, the rays of the incident pencils converging to their proper foci there, by the refraction of the different humours, for which purpose they are admirably adapted; for, as the distance between the back and front of the eye is very small, and the rays of each of the pencils that form the image fall parallel, or else diverging, on the eye, a strong refractive power is necessary for bringing them to their foci at the retina; but each of the humours, by its peculiar form and density, contributes to cause a convergence of the rays; the aqueous, from its convex form; the crystalline, by its double convexity and greater density than the aqueous; and the vitreous, by a less density than the crystalline, joined to its concave form. The structure of the eyes is, in general, adapted to the reception of parallel rays; but, as the distances of visible objects are various, so the eye has powers of accommodating itself to rays proceeding from different distances, by altering the distances of the crystalline from the retina, which is done by the action of the ciliary ligaments. Defective sight arises from an incapacity of altering the position of the crystalline within the usual limits: 1. when it cannot be brought close enough to the cornea, near objects appear indistinct; to this defect people in years are generally subject; 2. when the crystalline cannot be drawn sufficiently near to the retina, remote objects appear indistinct; this is the defect under which short-sighted people labour. In each of these cases, the images of the different points in the object would be diffused over small circles on the retina, and so, being intermixed and confounded with each other, would then form a very confused picture of the object. For, in the former case, the image of any point would be formed behind the retina, as the refraction of the eye is not sufficiently strong to bring the rays (diverging so much as they do in proceeding from a near point) to a focus at the retina. This defect will therefore be remedied by a convex glass, which makes the point whence the rays now proceed more distant than the object; therefore the rays, falling on the eye, will now diverge less than before, or else be parallel, and will, of course, be brought to a nearer focus, viz., at the retina. In the latter case, the image is formed before the retina, because the refractive power of the eye is too great to permit rays so little diverging (as they do in proceeding from a distant point) to reach the retina, before they are collected into a focus: in this case, the defect is supplied by a concave glass, which makes the point whence the rays diverge nearer than the object; consequently, the rays falling on the eye will now diverge more than before, so as, when refracted through the humours, not to come to their focus before they reach the retina. Therefore spectacles are constructed concave for short-sighted, and convex for long-sighted people. And the frames of spectacles should be so bent that the axis of both glasses may be directed to the same point, at such a distance as you generally look with spectacles. By this means the eyes will fall perpendicularly upon both glasses, and make the object appear distinct; whereas, if they fall obliquely upon the glasses, the object will appear confused, and indistinct.

Cause of Squinting.—A person is said to *squint*, when both eyes do not seem to be directed to the object at which he is looking. When either of the eyes has a less perfect vision, or a different focal length, or when there is any weakness in its external muscles, we are apt to make use only of the good eye; and when we acquire the habit of doing this, the imperfect eye is left at rest, and will sometimes cease even to follow the movements of the other. If the good eye is shut, and the bad one forced to exert itself, the iris will be placed symmetrically between the eyelids, and the squint formerly seen in the eye will disappear. Should the eye, in this case, still squint, the cause of it must be sought either in the central hole of the retina not being at the extremity of the axis, or in some mal-conformation, by which the retina is not perpendicular to the axis of the eye, at the point where they meet. This disease of the eye, which is so generally neglected, might be frequently cured, even in adults, by those who are thoroughly acquainted with the structure and functions of this organ.

The structure of the eye has already been described in our article *Eye* (q. v.). In order that distinct vision should be effected, it is necessary that the rays from the luminous object should be converged in points upon the retina. When, from the little convexity in the crystalline lens, or any other cause, these rays are not converged upon the retina, but behind, indistinct vision will be the result. When this is the case, a convex lens is interposed between the object and the eye, to assist the humours in converging the rays sooner, so that they may meet on the retina. If the cornea, or the crystalline lens, or both, be too flat, so as not to converge the rays from the object c, fig. 15, until they arrive at the point F, which is beyond the retina, a convex lens A B must be interposed between the object and the eye, to assist the imperfect visual organ, and cause the rays to converge at the point *d*, exactly on the retina. In the other case, when the humours of the eye have too much convexity, a plano-convex, or double convex lens A B, fig. 16, is necessary to give divergence to the rays proceeding from the object at c, and cause them to converge on the retina, instead of at the point F before they reach it.

The degree of curvature of the lenses must obviously be adapted to compensate exactly for the defect or excess of the curvature of the cornea or crystalline lens.

Accidental Colours.—One of the most curious affections of the eye is that which gives rise to ocular spectra, or accidental colours. If we place a red wafer on a sheet of white paper, and, closing one eye, keep the other directed for some time to the centre of the wafer, then, if we turn the same eye to another part of the paper, we shall see a green wafer, the colour of which will grow fainter and fainter as we continue to look at it. This green image of the wafer is called an *ocular spectrum*, or the accidental, or opposite colour of red. By using different coloured wafers, we obtain the following results:

Colour of the Wafer.	*Colour of the Spectrum.*
Black, . .	White.
White, . . .	Black.
Red, . .	Bluish green.
Orange, . .	Blue.
Yellow, . .	Indigo.
Green, . . .	Violet, with a little red.
Blue, . .	Orange red.
Indigo, . . .	Orange yellow.
Violet, . .	Bluish green.

When a strong impression of white light is made upon the eye, a succession of remarkable spectra is visible. When the sun was near the horizon, M. Æpinus fixed his eye steadily upon it for fifteen seconds. Upon shutting his eye he saw an irregular, pale, greenish-yellow image of the sun, surrounded with a faint red border. When he opened his eye, and turned it to a white ground, the image of the sun was brownish-red, and its border sky-blue. With his eye again shut, the image appeared green, and the border a red, different from the last. On opening his eye, and turning it to a white ground, as before, the image was more red than formerly, and the border a brighter sky-blue. His eye being again shut, the image was green, approaching to sky-blue, and the border a red, still differing from the former. When his eye was again opened upon a white ground, the image was still red, and its border sky-blue, but with different shades from the last. At the end of four or five minutes, when his eye was shut, the image was a fine sky-blue, and the border a brilliant red; and, upon opening his eye, as formerly, upon a white ground, the image was a brilliant red, and the border a fine sky-blue. Experiments of a similar kind were made by doctor Brewster, by looking at a brilliant image of the sun's disk, formed by a concave mirror. With his right eye tied up, he viewed this luminous disk with the left, through a blackened tube, to prevent any extraneous light from falling upon the retina. When the retina was highly excited by this intense light, he turned his left eye to a white ground, and perceived the following spectra, by alternately opening and shutting his eye:—

Spectra with the left Eye open.	*Spectra with the left Eye shut.*
1. Pink, surrounded with green,	Green.
2. Orange, mixed with pink, .	Blue.
3. Yellowish brown, . . .	Bluish pink.
4. Yellow, ...	Lighter blue.
5. Pure red, ...	Sky-blue.
6. Orange, ...	Indigo.

These spectra were always surrounded with a ring of the accidental colour. If, when one of these spectra is visible, we press the eye to one side, the spectrum will appear to be absolutely immovable, if the experiment is not made with much attention. It will be found, however, by pressing both the eyes at once, and by due attention to their corresponding motions, that the spectrum does move, and that it is seen by the eye in the same manner as if it were the image of an external object, conformably to the law of visible direction. By means of pressure upon the eyeball, ocular spectra may be produced; and when spectra, produced by external impressions of light, are seen by the eye, their colours are changed by pressure on the eyeball. The pressure of the blood-vessels on the back of the eye often produces spectra, in particular states of the stomach. In slight affections, these spectra are floating masses of blue light, which appear and disappear in succession; but, in severe ones, they become green, and sometimes rise to yellow: hence it follows, that pressure upon the retina creates the sensation of light and colours.

Colours produced by the unequal Action of Light upon the Eyes.—If we hold a slip of white paper vertically, about a foot from the eye, and direct both eyes to an object at some distance beyond it, so as to see the slip of paper double, then, when a candle is brought near the right eye, so as to act strongly upon it, while the left eye is protected from its light, the left hand slip of paper will be of a tolerably bright green colour, while the right hand slip of paper, seen by the left eye, will be of a red colour. If the one image overlaps the other, the colour of the overlapping parts will be white, arising from a mixture of the complementary red and green. When equal candles are held equally near each eye, each of the images of the slip of paper is white. If, when the paper is seen red and green, by holding the candle to the right eye, we quickly take it to the left eye, we shall find that the left image of the slip of paper gradually changes from green to red, and the right one from red to green, both of them having the same tint during the time in which the change is going on. This experiment seems to confirm the observation of Dr Brewster, that in certain highly excited states of one eye, the reverse impression may be conveyed from the one eye to the other.

Insensibility of certain Eyes to particular Colours.—Various cases have been described, in which persons capable of performing the most delicate functions of vision are unable to distinguish particular colours, and, what is certainly a most remarkable fact, this imperfection runs in families. A shoemaker by the name of Harris, at Allonby in Cumberland, could only distinguish black and white. He was unable, when a child, to distinguish the cherries on a tree from the leaves, except by their shape and size. He had two brothers whose perception of colours was almost equally defective, one of whom constantly mistook orange for grass green, and light green for yellow. He had two other brothers and sisters, who, as well as his parents, had no such defect. Another case of a Mr Scott is described by himself in the Philadelphia Transactions for 1778. He did not know any green colour; a pink colour and a pale blue were perfectly alike to him. A full red and a full green were so alike, that he often thought them a good match; but yellows, light, dark, and middle, and all degrees of blue, except pale sky-blue, he knew perfectly well; and he could discern, with particular niceness, a deficiency in any of them. A full purple and a deep blue, however, sometimes baffled him. Mr Scott's father, his maternal uncle, and one of his sisters, and her two sons, had all the same defect. Mr Dugald Stewart, Mr Dalton, and Mr Troughton, are examples of the same inability to distinguish certain colours. Mr Harvey has described, in the Edinburgh Transactions, the case of a tailor, then alive, and aged sixty, who could distinguish with certainty only white, yellow, and gray. On one occasion, he repaired an article of dress with crimson in place of black silk; and, on another occasion, he patched the elbow of a blue coat with a piece of crimson cloth. He regarded indigo and prussian blue as black, purple as a modification of blue, while green puzzled him extremely. He considered carmine, lake, and crimson to be blue. The solar spectrum appeared to him to consist only of yellow and light blue. None of the family of this person had the same defect. In these various cases, the persons are insensible to red light, and all the colours into which it enters. Mr Dalton thinks it probable that the red light is, in these cases, absorbed by the vitreous humour, which he supposes may have a blue tint. If, which is probable, the choroid coat be essential to vision, we may ascribe the loss of red light in certain eyes to the retina itself having a blue tint. If the dissection of the eye of any person who possesses this peculiarity shall not establish either of these two suppositions, we must content ourselves with supposing that the retina is insensible to the colours at the end of the spectrum, just as the ear of certain persons has been proved by doctor Wollaston to be insensible to sounds at one extremity of the scale of musical notes, while it is perfectly sensible to all other sounds.

Optical Instruments.—The impediments to the vision of very near objects arise from too great a divergence of the rays in each pencil incident on the eye, and are remedied by the microscope. The most powerful single microscopes are very small globules of glass, which any person may make for himself, by melting the ends of fine threads of glass in the flame of a candle; or by taking a little fine powdered glass on the point of a very small needle, and melting it into a globule before a smooth blow-pipe. It was with such microscopes as these that Leuwenhoek made all his wonderful discoveries, most of which are deposited in the British museum. The double or compound microscope differs from the preceding in this respect—that it consists of at least two lenses, by one of which an image is formed within the tube of the microscope; and this image is viewed through the eyeglass instead of the object itself, as in the single microscope. In this respect, the principle is analogous to that of the telescope, only that, as the latter is intended to view distant objects, the object-lens is of a long focus, and consequently of a moderate magnifying power, and the eyeglass of a short focus, which magnifies considerably the image made by the object-lens; whereas, the microscope being intended only for minute objects, the object-lens is consequently of a short focus, and the eyeglass, in this case, is not of so high a magnifying power. The solar microscope is a kind of *camera obscura*, which, in a darkened chamber, throws the image on a wall or screen. It consists of two lenses fixed opposite a hole in a board or window-shutter—one which condenses the light of the sun upon the object (which is placed between them), and the other which forms the image. There is also a plain reflector placed without, moved by a wheel and pinion, which may be so regulated as to throw the sun's rays upon the outer lens. Mr Adam's most ingenious invention—the lucernal microscope—is also to be considered as a kind of *camera obscura*, only the light, in this latter case, proceeds from a lamp instead of from the sun, which renders it convenient to be used at all times. From what has been said on the nature of the microscope, the principle of the telescope may be easily understood. Telescopes are of two kinds—the one depending on the principle of refraction, and called the *dioptric* telescope, the other on the principle of reflection, and therefore termed the *reflecting* telescope.

The great object in constructing a microscope or telescope, is to bring the image of the object as near to the eye as possible, so that it may be viewed under a much greater angle than it could be, were the instrument not interposed between the object and the observer. It is a law in vision, that an object will appear the larger in proportion to the magnitude of the angle formed by any two rays flowing from its opposite extremities; and the nearer the object is to the eye, the greater will be this angle. Thus, in fig. 17, let the arrow A B be placed at a given distance from the eye, the rays from its extremities will converge and enter the eye at Q R, they will be refracted by the humours of the eye, as described in a former section, and form an inverted image, M N, on the retina. That a smaller arrow, at C D (nearer the eye), and a still smaller arrow (still nearer), would form a similar image of the same magnitude, will readily be seen by an inspection of the figure. But if an arrow, G H, of the same magnitude as the arrow A B, were held nearer the eye than A B, it would appear larger, because the rays from its extremities form a greater angle. In the diagram, the arrow G H is placed at half the distance of the arrow A B; and the angle formed by its rays will be twice as large, and consequently the image on the retina twice as large. The image, O P, would appear to be formed by rays from an arrow, T V, double the length of A B, and at the same distance. The apparent length of an object will be diminished one half, by removing it to twice the original distance from the eye; to one third, at thrice the distance, &c.; and so will the breadth. Now, a surface, which is only one half as broad, and one half as long as another, is only one fourth the magnitude; if only one third of the length, and one third of the breadth, the magnitude will be but one ninth, &c.; so that the apparent size of objects is inversely as the squares of their distances; that is, if at sixteen feet distant, an object appear one square foot in magnitude, then at eight feet it will appear four; at four feet, sixteen; and at one foot, as if containing 256 feet.

By means of a convex lens, a great number of rays from any minute object are united in a sensible point; and as each ray carries with it the image of the point from whence it proceeded, a distinct image will be formed, provided the rays keep their proper relative positions; and thus it is that a single microscope removes the confusion of rays of an object, when viewed at a short distance from the eye, and thus enables it to examine the object under a greater angle of vision. In the compound microscope, there are essentially two lenses, and its chief superiority over the single microscope is, that by it we obtain a larger field of view. The small object, *a b*, fig. 18, is placed a little farther from the object-glass, *c d*, than its principal focus, or focus for parallel rays, so that an image may be formed at *g h*. This image is viewed by the eyeglass, *e f*, which is so placed that the eye and the image are in its respective foci on the opposite sides, in consequence of which, the rays enter the eye parallel to each other, after which they are converged upon the retina, and a very large image is formed.

Fig. 19, represents a very simple form of the refracting telescope, in which B represents the eye, *m n*, the eyeglass (double concave), and *o p* the object-glass, (double convex.) There are two pencils of rays proceeding from the arrow *x y;* those from *x* go on diverging till they come to the lens *o p*, and by the refraction of that lens they will be converged in the point E, and so of the rays from *y;* consequently an image will be formed at E; but the concave lens, *m n*, being interposed before they meet, prevents the convergence from occurring so soon, and throws the image upon the retina *a b*, where it is magnified. As the concave lens throws many of the rays beyond the pupil, the field of view is very small. By employing a double convex eyeglass this is remedied, as shown in fig. 20. The object-glass, *o p*, converges the rays from *x* and *y*, and forms an inverted image at *m* E *d*, and by interposing the lens *g h*, this image is seen under a large visual angle, so as to appear of the magnitude C E D. In this telescope the image is inverted, but corrected by interposing other convex lenses between the object and eyeglasses. Here two such lenses are introduced, each of the same focus as the first.

The great inconvenience attending refracting telescopes is their length, and on that account they are not very much used when high powers are required. A reflector of six feet long will magnify as much as a refractor of a hundred feet. In reflectors the concave mirror is substituted for the convex lens. T T, fig. 21, represents the large tube, and *t t* the small tube of the telescope, at one end of which is D F, a concave mirror, with a hole in the middle at P, the principal focus of which is at I K; opposite to the hole P is a small mirror L, concave towards the great one; it is fixed on a strong wire M, and may, by means of a long screw on the outside of the tube, be made to move backwards or forwards. A B is a remote object, from which rays will flow to the great mirror D F. And in order to trace the progress of the reflections and refractions, the upper ones are represented by full lines, the lower ones by dotted lines. Now the rays at C and E, falling upon the mirror at D and F, are reflected, and form an inverted image at *m*. And they go on towards the reflector L, the rays from different parts of the object crossing one another a little before they reach L. From the mirror L the rays are reflected nearly parallel through P; there they have to pass the plano-convex lens R, which causes them to converge at *a b*, and the image is now painted in the small tube near the eye. By means of the lens R, and the two concave mirrors, the image of the object is brought so nigh as at *a b*, is magnified by the lens S, and will appear as large as *c d*, that is, the image is seen under the angle *c f d*.

This telescope is of the Gregorian form; but for large instruments the Newtonian reflecting telescope is commonly preferred. A concave mirror, *n o*, fig. 22, is placed in the bottom of a tube, A, D, C, B, which also contains a plane mirror *q*, at an angle of 45°, and fixed upon the arm *p q*, and in the side of the tube there is an eyeglass, h. Rays from a distant object enter the tube, and fall upon the concave mirror *n o*, from whence they are reflected, converging upon the surface of the plane mirror *q*, and thence in the direction *q g*, being converged in the focus at *g*, and the image is viewed magnified by the convex eyeglass *h*. Herschel dispensed with the plane mirror altogether, by inclining the concave one, so that the image might be viewed by the eyeglass alone. See *Camera*, *Kaleidoscope*, *Phantasmagoria*, &c.

Inflection of Light.—The direction of the rays of light is changed, as we have seen, in their approach to certain bodies, by reflection and refraction; and, consequently, we must admit that there is some power in these bodies by which such effects are universally produced. If reflection was produced simply by the impinging of particles of light on hard or elastic bodies, or if they were in themselves elastic, the same effects would follow as in the impulse of other elastic bodies; but the angle of incidence could not be equal to the angle of reflection, unless the particles of light were perfectly elastic, or the bodies on which they impinged were perfectly elastic. Now, we know that the bodies on which these particles impinge are not perfectly elastic; and also that, if the particles of light were perfectly elastic, the diffusion of light from the reflecting bodies would be very different from its present appearance; for, as no body can be perfectly polished, the particles of light, which are so inconceivably small; would be reflected back by the inequalities on the surface in every direction; consequently we are led to this conclusion, that the reflecting bodies are possessed of a power which acts at some little distance from their surfaces. If this reasoning is allowed to be just, it necessarily follows that, if a ray of light, instead of impinging on a body, should pass so near to it as to be within the sphere of that power which the body possesses, it must necessarily suffer a change in its direction. Actual experiments confirm the truth of this position; and to the change in the direction of a particle of light, owing to its nearness to a body, we give the name of *inflection.* From one of these experiments made by Sir Isaac Newton, the whole of this subject will be easily understood. At the distance of two or three feet from the window of a darkened room, in which was a hole three-fourths of an inch broad to admit the light, he placed a black sheet of pasteboard, having in the middle a hole about a quarter of an inch square, and behind the hole the blade of a sharp knife, to intercept a small part of the light which would otherwise have passed through the hole. The planes of the pasteboard and blade were parallel to each other; and when the pasteboard was removed to such a distance from the window as that all the light coming into the room must pass through the hole in the pasteboard, he received what came through this hole on a piece of paper, two or three feet beyond the knife, and perceived two streams of faint light shooting out both ways from the beam of light into the shadow. As the brightness of the direct rays obscured the fainter light, by making a hole in his paper, he let them pass through, and had thus an opportunity of attending closely to the two streams, which were nearly equal in length, breadth, and quantity of light. That part which was nearest to the sun's direct light was pretty strong for the space of about a quarter of an inch, decreasing gradually till it became imperceptible; and, at the edge of the knife, it subtended an angle of about 12°, or at most 14°. Another knife was then placed opposite to the former, and he observed that, when the distance of their edges was about the $\frac{1}{400}$th part of an inch, the stream divided in the middle, and left a shadow between the two parts, which was so dark that all light passing between the knives seemed to be bent aside to one knife or the other. As the knives were brought nearer to each other, this shadow grew broader, till, upon the contact of the knives, the whole light disappeared. Pursuing his observations upon this appearance, he perceived fringes, as they may be termed, of different coloured light, three made on one side by the edge of one knife, and three on the other side by the edge of the other; and thence concluded that, as, in refraction, the rays of light are differently acted upon, so are they at a distance from bodies by inflection; and by many other experiments of the same kind, he supported his position, which is confirmed by all subsequent experiments. We may naturally conclude that, from this property of inflection, some curious changes will be produced in the appearance of external objects. If we take a piece of wire of a less diameter than the pupil of the eye, and place it between the eye and a distant object, the latter will appear magnified; for the rays by which the object would have been otherwise seen are intercepted by the wire, and it is now seen by inflected rays, which make a greater angle than the direct rays.

Natural Phenomena.—The most interesting of these is the *rainbow*, which consists of two bows, or arches, extended across the part of the sky, which is opposite to the sun. The innermost of the bows, and which is most commonly seen by itself, it being the principal rainbow, is part of a circle whose diameter is 82°, and is nothing more than an infinite number of prismatic spectra of the sun arranged in the circumference of a circle, the colours being the very same, and occupying the same space as in the spectrum produced from the sun's light. The red rays form the outermost portion, and the violet rays the innermost portion of the bow.

Let A, fig. 23, be a drop of rain, and S *d* a ray from the sun falling upon or entering it at *d*, it will not go to *c*, but be refracted to *n*, where a part will go out, but a part also will be reflected to *q*, where it will go out of the drop, which, acting like a prism, separates the ray into its primitive colours, and the violet will be uppermost, the red lowermost. These colours are all at fixed angles; the least refrangible, or red, makes an angle with the solar incident ray, equal to little more than 42°; and the violet or most refrangible ray, will make with the solar ray an angle of 40°. The ray S *d* would go to *f c*, therefore the angle made with the red ray is S *f q*, and that made with the violet ray is S *c q;* the former is 42° 2′, the latter 40° 17′. The upper, or external bow is formed by two refractions and two reflections: suppose the ray T *r* to be entering the drop B at *r*. It is refracted at *r*, reflected at S, reflected again at *t*, and refracted as it goes out at *u*, whence it proceeds, being separated, to the spectator, at *g*. Here the colours are reversed; the angle formed by the red ray is 51°, and that formed by the violet is 54°.

The external or secondary bow is much fainter than the other, and has the violet outermost and the red innermost. It is part of a circle 104° in diameter. As the rainbow is never seen unless when the sun is shining, and when rain is falling between the spectator and the part of the horizon where the bow is seen, it is obvious that it depends upon the decomposition of the white light of the sun, by the refraction of the drops of rain and their subsequent reflection within the drops—an explanation sufficiently adequate, from the fact that rainbows are produced by the spray of waterfalls, and may be made artificially by scattering water with a brush or syringe when the sun is shining. The primary bow is the effect of one reflection and two refractions of the sun's rays by the drops of rain: the secondary one is formed by two reflections and two refractions. Within the primary rainbow, and immediately in contact with it, there have been seen what are called *supernumerary* rainbows, each of which consists of red and green. Their origin has not been explained. *Lunar* rainbows have been seen; but they differ in no respect from those formed by the solar rays, excepting in the faintness of their light. A *halo* is a circle, either composed of white light, or consisting of the prismatic colours, which is occasionally seen round the sun or moon. *Parhelia* are mock suns, which appear at places where two haloes or arches of luminous circles about the sun intersect each other. The prismatic haloes which are sometimes visible about the sun and moon, in fine weather, when white, thin, fleecy clouds are floating in the atmosphere, are called *coronæ.* Owing to the dazzling effect of the sun's rays, the haloes which surround his disk may be seen to most advantage by reflection in a pool of water. These phenomena are attributed to the crystals of ice and snow floating in the atmosphere, and, in some cases, to the action of drops of rain of different sizes. The elevation of coasts, ships, and mountains above their usual level, when seen in the dsitant horizon, has been long known and described under the name of *looming*. The name of *mirage* has been applied by the French to the same class of phenomena; and the appellation of *fata morgana* has been bestowed by the Italians to the singular appearances of the same kind, which have repeatedly been seen in the straits of Messina. When the rising sun throws his rays at an angle of 45° on the sea of Reggio, and neither wind nor rain ruffle the smooth surface of the water in the bay, the spectator, on an eminence in the city, who places his back to the sun and his face to the sea, observes, as it were upon its surface, numberless series of pilasters, arches, and castles distinctly delineated; regular columns, lofty towers, superb palaces, with balconies and windows; extended valleys of trees, delightful plains, with herds and flocks; armies of men on foot and horseback, and many other strange figures, in their natural colours and proper actions, passing one another in rapid succession. When vapours and dense exhalations, rising to the height of about twenty feet, appear, then the same objects are seen depicted, as it were in the vapour, and suspended in the air, though with less distinctness than before. Captain Scoresby, when navigating the Northern seas, was able to recognise his father's ship when below the horizon, from the inverted image of it which appeared in the air. "It was," says he, "so well defined, that I could distinguish, by a telescope, every sail, the general rig of the ship, and its particular character, insomuch that I confidently pronounced it to be my father's ship, the Fame, which it afterwards proved to be; though, in comparing notes with my father, I found that our relative position at the time gave our distance from one another very nearly thirty miles, being about seventeen miles beyond the horizon, and some leagues beyond the limit of direct vision." In the sandy plains of Egypt the mirage is seen to great advantage. These plains are often interrupted by small eminences, upon which the inhabitants have built their villages, in order to escape the inundations of the Nile. In the morning and evening, objects are seen in their natural form and position; but where the surface of the sandy ground is heated by the sun, the land seems terminated, at a particular distance, by a general inundation, the villages beyond it appearing like so many islands in a great lake, and between each village an inverted image of it is seen. This optical deception has been noticed from the remotest times. The prophet Isaiah alludes to it, when he says, "and the parched ground shall become a pool." The cause of these phenomena consists in variations in the refractive power of the atmosphere, which may be proved by actual experiment. This has been done in a variety of ways; but we shall only mention the method adopted by doctor Brewster. He held a heated iron above a mass of water bounded by parallel plates of glass: as the heat descended slowly through the fluid, a regular variation of density, diminishing from the bottom to the surface, took place. On withdrawing the heated iron, and putting a cold body in its place, or even on allowing the air to act alone, the superficial stratum of water gave out its heat so as to produce a decrease of density from the surface to a certain depth below it. Through the medium thus constituted, the phenomenon of the mirage was observable in the finest manner. See *Fata Morgana*.

Colours of the Atmosphere.—As the earth is surrounded with an atmosphere, varying in density from the surface of the globe, where it is the densest, to the height of about forty-five miles, where it is extremely rare, and just able to reflect the rays of the setting sun, the rays of the sun, moon, and stars are refracted into curve lines, unless when they are incident upon it perpendicularly. Hence the apparent altitude of the celestial bodies is always greater than their real altitude, and they appear above the horizon when they are actually below it. But while the solar rays traverse the earth's atmosphere, they suffer another change from the resisting medium which they encounter. When the sun, or any of the heavenly bodies, is considerably elevated above the horizon, its light is transmitted to the earth without any perceptible change; but when these bodies are near the horizon, their light must pass through a long tract of air, and is considerably modified before it reaches the eye of the observer. The momentum of the red, or greatest refrangible rays, being greater than the momentum of the violet, or least refrangible rays, the former will force their way through the resisting medium, while the latter will be either reflected or absorbed. A white beam of light will therefore be deprived of a portion of its blue rays by its horizontal passage through the atmosphere, and the resulting colour will be either orange or red, according to the quantity of the least refrangible rays that have been stopt in their course; hence the rich and brilliant hue with which nature is gilded by the setting sun, and hence the glowing red which tinges the morning and evening cloud. We have already seen that the red rays penetrate through the atmosphere, while the blue rays, less able to surmount the resistance which they meet, are reflected or absorbed in their passage. It is to this cause that we must ascribe the blue colour of the sky, and the bright azure which tinges the mountains of the distant landscape. As we ascend in the atmosphere, the deepness of the blue tinge dies away; and to the aeronaut who has soared above the denser strata, or to the traveller who has ascended the Alps or the Andes, the sky appears of a deep black, while the blue rays find a ready passage through the attenuated strata of the atmosphere It is owing to the same cause, that the diver at the bottom of the sea is surrounded with the red light which has pierced through the superincumbent fluid, and that the blue rays are reflected from the surface of the ocean. Were it not for the reflecting power of the air, and of the clouds which float in the lower regions of the atmosphere, we should be involved in total darkness by the setting of the sun, and all the objects around us would suffer a total eclipse by every cloud that passed over his disk. It is to the multiplied reflections which the light of the sun suffers in the atmosphere that we are indebted for the light of day, when the earth is enveloped with impenetrable clouds. From the same cause arises the sober hue of the morning and evening twilight, which increases as we recede from the equator, till it blesses with perpetual day the inhabitants of the polar regions.

Coloured Shadows.—The shadows of bodies placed only in one light, and at a distance from all other bodies capable of reflecting light, must necessarily be black. In a summer morning, or evening, however, the shadows of bodies formed either by the light of the sun, or by that of a candle, have been observed to be blue: this obviously arises from the shadows being illuminated with the light of the blue sky. The colours thus produced vary in different countries, and at different seasons of the year, from a pale blue to a violet black; and when there are yellow vapours in the horizon, or yellow light reflected from the lower part of the sky, either at sunrise or at sunset, the shadows have a tinge of green, arising from the union of these accidental rays with the blue tint of the shadow. If the light of the sun or of the candle be faint, then the shadow of the body, formed by the light of the sky, will be visible also, and the two shades will be the one blue and the other a pale yellow. This fact has been ascribed to the circumstance of the light of thé candle and that of the rising and setting sun being of a yellowish tinge; but though this will increase the effect, it is not the main cause of it, as one of the shadows would be yellow, even if the light of the sun and the candle had been perfectly white. The phenomena of coloured shadows are sometimes finely seen in the interior of a room, the source of one of the colours being sometimes the blue sky, and the other the green window blinds, the painted walls, or the coloured furniture.

Converging and diverging Beams.—When the sun is descending in the west, through masses of open clouds, the diverging of his beams, rendered visible by their passage through numerous openings, forms frequently a very beautiful phenomenon. It is sometimes accompanied with one of an opposite kind, viz. the convergency of beams to a point in the eastern horizon opposite to the sun, and as far beneath the horizon as the sun is above it, as if another sun, throwing out divergent beams, were about to rise in the east. This phenomenon is rarely seen in perfection, and has never been observed until within a few years. In order to explain it, let us suppose a line to join the eye of the observer and the sun. Let beams issue from the sun in all possible directions, and let us suppose that planes pass through these beams, and through the line joining the eye of the observer and the sun, which will be their common intersection, like the axis of an orange, or the axis of the earth, through which there pass all the *septa* of the former, and all the planes passing through the meridians of the latter. An eye, therefore, situated in this line, or common intersection of all the planes, will, when looking at a concave sky, apparently spherical, see them diverging from the sun on one side, and converging towards the opposite point. Two deeply interesting branches of optics remain yet to be considered; namely, the laws of the *double refraction* and *Polarization* of light. q. v.

OPTIMATES, with the Romans; the party of the nobility (tories), in contradistinction to the *populares* (men of the people—liberals).

OPTIMISM; that philosophical and religious opinion which maintains that this world, in spite of its apparent imperfections, is the best, and could not be otherwise than it is. Even the Stoics and Plotinus were of this opinion. This name, however, is chiefly given to the doctrine of Leibnitz—that God has, among the possible worlds which presented themselves to his understanding, chosen and created the best. Leibnitz developed this doctrine in his *Theodicea*, particularly with reference to the doubts and objections of Bayle, on account of the evil in the world, and showed that what appears imperfect considered by itself, is by no means imperfect considered with regard to the whole, and that the single parts are the best when considered in their connexion with the whole. This philosophical doctrine was generally reduced to the dilemma—If this world were not the best, God either did not know a better one, or was unable or unwilling to create it—suppositions which impugn his omniscience, omnipotence or perfect benevolence. Hence the inference was, that this world must be considered the best. See Leonh. Creuzer, *Leibnitii Doctrina de Mundo optimo*; see also, the article *Candide*.

ORACLES; responses given by persons who pretended to divine inspiration; also the places where the responses were uttered with certain prescribed ceremonies. There is not a sufficient stock of trustworthy information from antiquity to determine their origin or nature. The origin of the Egyptian oracles is dated at a period to which not even traditions, and much less historical monuments, extend. The oldest was that at Meroe; next, those at Thebes and Ammonium. In each of these places, Jupiter Ammon was the presiding deity. The oracle at Dodona, the oldest in Greece, was formed on the model of the last mentioned, but united the Egyptian and Pelasgian character. The account given by Herodotus of the origin of the Pelasgian oracle, shows that a colony from Africa attempted, by such an institution, to establish themselves in Greece. But a sacred tree in this place was, at an earlier period, oracular, and the rustling of its branches had been received as responses: consecrated women from Africa (prophetesses, the black doves of Herodotus) only dedicated this Pelasgian oracle to Jupiter Ammon. According to Ritter, the oracle of Dodona (formerly Bodona) points to the service of Buddha. Of equal antiquity, perhaps, was the oracle in Bœotia, which first belonged to the Earth, then to Themis, and afterwards was transferred to Apollo. Still later was instituted the oracle at Delphi, which became the most important of all, partly from its favourable situation, and partly from its connexion with the council of the Amphictyons, at Pylæ. Besides, Jupiter had an oracle at Elis, at Pisa, and in a subterranean cave in Crete; and Apollo at Delos, where the whispering of the trees gave responses, at Miletus, where a sacred fountain, at Claros, not far from Colophon, where a consecrated river, inspired the priests, and many others. In addition to these, the oracle of Trophonius, at Lebadia, in Bœotia, and that of Amphiaraus, at Oropus, on the borders of Attica and Bœotia, were in high reputation in Greece. Juno had an oracle in the Corinthian territory; Hercules, at Bura, in Achaia, where answers were given by throwing dice; Bacchus, at Amphiclea, in Phocis, which returned answers in dreams, &c. Tzetzes mentions an oracle of Ulysses; and other heroes and prophets had theirs. The Romans had no domestic oracles, if we except the Albunea, the Cumæan Sibyl, the Sibylline books, the oracle of Faunus and of Fortuna at Præneste (which belonged to the earliest times, and afterwards lost their reputation), but had recourse to those of Greece and Egypt. In the founding of cities and colonies, the introduction of new governments, the undertaking of important enterprises, both in war and peace, and particularly in all cases of great necessity, the oracles were consulted, and rich gifts presented to them; their priests needed great watchfulness and prudence not to expose themselves. Darkness and ambiguity in the responses was the common resource. Sometimes, however, there were obvious failures. But, notwithstanding these, and notwithstanding well-known instances of corruption, they long maintained their standing, and sunk only with the freedom and independence of Greece. Under the reign of Theodosius, the temples of the prophetic deities were shut up or demolished. Van Dale and Fontenelle thought to explain the whole system of oracular responses by priestly management, founded on the popular delusion. Others have thought this insufficient to account for the fact that the wisest men in a refined nation received them as sacred for centuries, as in Greece.—See Clavier's *Mémoire sur les Oracles des Anciens* (1819).

ORAMA, DIORAMA. See *Panorama*.

ORANGE (*citrus aurantium*); a low, evergreen, branching tree, bearing oblong, oval, acute, smooth, and shining leaves, inserted on winged leaf-stalks, by which character it is easily distinguished from the lemon. The flowers are white, containing about twenty stamens, and are disposed in clusters of from two to six upon a common peduncle. The fruit is globose, bright yellow, and contains a pulp, which consists of a collection of oblong vesicles filled with a sugary and refreshing juice: it is, besides, divided into eight or ten compartments, each containing several seeds. The principal varieties are the sweet or China, and the bitter or Seville orange; the Maltese orange is also deserving of notice, from its red pulp. Though now extensively cultivated in the south of Europe, the introduction of the orange is of modern date, and it was unknown in that continent till about the beginning of the fifteenth century. At the present time, it forms an extensive branch of commerce between the Mediterranean and the more northern countries. It is exceedingly long-lived, and is still esteemed young at the age of a century. An essential oil is obtained from the flowers, which is hardly less esteemed than the celebrated ottar of roses. *Bergamot* is a well-known perfume, obtained from the rind of a variety of the orange, and has received the name from the town of *Bergamo*, in Italy, where this variety is much cultivated. The wood of this tree is fine-grained, compact, susceptible of a fine polish, and is employed in the arts. The orange, together with the lemon, citron, lime, shaddock, and indeed almost the entire family *aurantiaceæ*, is a native of tropical Asia and the East Indies. A singular exception is found in America: a species of orange, bearing fruit of a very agreeable flavour, is extremely abundant in East Florida, and according to the testimony of scientific travellers, is undoubtedly native: it has not, however, been accurately compared with other species, and, what is more remarkable, although mentioned by early travellers, has not hitherto found its way into systematic works on botany.

ORANGE; an ancient principality in France, which, from the eleventh to the sixteenth century, had its own princes. Philibert of Chalons, the last prince, having died, without issue, in 1531, the principality passed, through his sister (who was married to the count of Nassau), to the house of Nassau. It continued in this family till the death (1702) of William Henry of Nassau-Orange (William III. of England), when the succession became the subject of a long contest. The principal claimants were Frederic William I., king of Prussia (who claimed through his mother), and the prince of Nassau-Dietz, stadtholder of Friesland (who claimed by the will of William III). The king of Prussia, notwithstanding the protest of the other claimants, ceded the principality, by the peace of Utrecht (1713), to France. The reigning dynasty of the Netherlands is of the house of Orange, and the heir-apparent bears the title of *prince of Orange*. In November, 1830, the national congress of Belgium declared the house of Orange-Nassau to be for ever excluded from all power in Belgium.

Orange, the capital of the principality, an old city, known to the Romans under the name of *Arausio*, contains, at present, 8864 inhabitants. It is situated on the Meyne, in the department of Vaucluse, five leagues north of Avignon.

ORANGEMEN; the name given by the Catholics in Ireland to their Protestant countrymen, on account of their adherence to the house of Orange. Tyrconnel, who had been appointed lord-lieutenant of Ireland by James II., attempted to hold the island for his master, and was supported in this design by the Catholics, while the Protestants declared for William. The battle of the Boyne (1690) gave the superiority to the latter, and the Catholics were subjected to heavy civil and religious disabilities. See *Catholic Emancipation*; also the article *Ireland*.

ORATORIO; a musical drama of a dignified character, which is destined only for musical execution, not for theatrical action. Hence, on the part of the poetry, it requires, though not in the strict sense of the theatrical drama, the representation of an action or event, either immediately by the persons concerned in the action or event, or mediately by those who narrate the circumstances, and by the chorus at intervals, in which the whole body of individuals concerned express their feelings in music. The subject should be of a noble character (as, for example, the Creation), and the music adapted to express various elevated and tender affections. Oratorios are generally on religious subjects, particularly biblical histories and events. The oratorio, properly speaking, commenced when sacred music was distinctly separated from the worldly. It had its origin partly in the songs and alternating choruses of the Christian pilgrims, who sung on their pilgrimages, in the time of the crusades, of the life and death of the Redeemer, the last judgment, and other religious subjects, in the streets and public places; and partly in the mysteries, or dramatic representations of sacred narratives. As early as 1243, a *spirituale commedia* was performed in Padua. St Philip of Neri (born at Florence, 1515, and died at Rome, in 1595), the founder of the congregation of priests of the oratorio, is regarded as the person who first instituted regular oratorios about the year 1540, in order to direct the fondness for the musical drama to religious subjects. The oratorios were then little more than hymns accompanied by instrumental music, whence they first appeared in Rome under the name of *laudi spirituali*. The *recitative* or musical narration, was invented afterwards. At first, however, the oratorios were narratives, rather than dramas, for an actor related the story to the spectators, and detailed the principal points; and only a few musical passages were performed, by which the feeling appropriate to the different situations was expressed. These performances in sacred music obtained the name of *oratorios* in the middle of the seventeenth century, either from the congregation before spoken of, or from the church where they were executed. Emilio del Cavalieri (about 1590) composed oratorios with recitatives. In the seventeenth century, the oratorio, as well as the opera, became developed in its poetical and musical form. The first oratorios had short choruses, in simple counterpoint; but, in the second half of the seventeenth century, it was customary to conclude with a duet every separate portion of an oratorio, which generally occupied about an hour in the performance. In the beginning of the eighteenth century, Pariati, the Jesuit Ceva, Lel. Orsini, Spagna, Zeno, and Metastasio, wrote oratorios, and Caldara, Jomelli, Leo, Buononcini, composed the music. A more elevated character was given to the oratorio by Handel, who devoted all his power to the chorus till 1732. Haydn distinguished himself by richness of description, and he introduced worldly subjects and music into the oratorio.

Oratorio signifies, likewise, a place of prayer, especially in monasteries.

ORATORY, Priests of the; a religious order founded by Philip Neri, in 1574, for the study of theology, and for superintending the religious exercises of the devout. The members are not bound by the monastic vows. In Italy, the order stil exists; but the more important congregation of the fathers of the oratory of Jesus in France—which was founded in 1611, at Paris, and has contained several distinguished members, as the philosopher Malebranche, the Orientalist Morin, and the liberal theologian Richard Simon—is no longer in existence. The Italian order follows, as did the French, the rule of St Augustine.

ORBILIUS PUPILLUS; a grammarian of Beneventum, who taught in Rome during Cicero's consulship. He has acquired celebrity by the mention which Horace has made of him (Ep. 2, 1, 70), as the *plagosus Orbilius* (the flogging Orbilius).

ORBITS OF THE PLANETS. See the article *Astronomy;* also the articles *Keplar* and *Planets.*

ORCADES. See *Orkney Islands.*

ORCHALL, or ARGOL, (*rocella tinctoria*); a species of lichen, celebrated for yielding a fine purple colour, which is employed in dyeing. It is chiefly obtained, in commerce, from the Canaries, Cape Verd islands, and the Grecian archipelago. It is the substance generally employed for colouring the spirits of thermometers; and it is a remarkable circumstance that, after the colour has been destroyed by time, it is again restored on breaking the tubes.

ORCHAN. See *Ottoman Empire.*

ORCHESTRA; the space in theatres between the seats of the spectators and the stage, appropriated by the Greeks to the chorus and the musicians, by the Romans to the senators, and by the moderns to the musicians. It is also used for the part of concert-rooms assigned to the musicians, and, lastly, for all the instruments performing together in modern concerts, operas, or sacred music. See *Architecture.*

ORCHESTRICS; the same as ὀρχησις, q. v., in the article *Dancing.*

ORCO RIVER, CASCADE OF. See *Cataract.*

ORCUS; the same as *Hades*, or *Pluto;* thence, also, the *kingdom of Pluto* (the infernal regions). See *Pluto*, and *Tartarus.*

ORDEAL. It was formerly believed by almost all nations, that, when proofs of right or wrong, innocence or guilt, were wanting, the God of truth and justice would himself interpose, and make known the truth by a miracle. In accordance with this opinion, a person suspected of any crime was made to perform solemnly before the priests certain acts which would, in the natural course of things, be injurious to him; and if he escaped unhurt, he was declared to be innocent. These processes were called *ordeals*, or *judgments of God*, and were in use particularly among the Germans. They are found also in the ancient sacred writings of the Hindoos. As success or failure, except in a few cases, depended on those who made the requisite preparations, a wide field was opened to deceit and malice, especially of the priest.

The following ordeals were in use in Germany and England:—The judicial duel, in which the conquered was viewed as guilty; the ordeal of fire; the ordeal of water; the hallowed morsel; the trial of the eucharist; the judgment of the cross; and the trial of the bier. In criminal cases, where the perpetrators of the deed could not be discovered, these ordeals were applied; some of them even in civil cases, so that the defendant could free himself in this way from claims or charges not sufficiently substantiated. Even among the Celts, children, whose mothers were suspected of adultery, were placed in a shield on the Rhine, and if they sunk, it was inferred that the suspicion was correct. The Salian Franks, at the beginning of the fifth century, used the ordeal of hot water, and the ordeal of cold water was introduced afterwards. After the introduction of Christianity, the use of ordeals soon became general; for the oath of purgation was but little, if at all, known, and by means of ordeals an opportunity was given to the clergy to subject legal trials of every kind to their own decisions, and thus to increase their authority. The ordeal of fire was as follows:—The accused was compelled to walk barefooted over glowing coals, or over nine red-hot ploughshares, or to carry a red-hot iron in his naked hand a considerable distance; or else glowing coals were laid upon his feet, or he was made to walk through fire: in the last trial, the accused was often dressed in a robe covered with wax (the trial of the waxen shirt;) if he was unhurt by the fire, it was regarded as a proof of his innocence. In other cases, a priest put the hallowed morsel into the mouth of the accused, with various imprecations. This was called the "trial by the hallowed bread or cheese." If the accused swallowed it instantly, and felt no sensation of sickness or pain, he was freed from punishment. The trial of the eucharist was used chiefly among the clergy and monks. They took the sacrament in attestation of their innocence, and it was believed that God would immediately smite the guilty with sickness or death. The trial of the cross was of two kinds. Both the accuser and the accused were placed under the cross with their arms extended or crosswise, and the one was condemned who first moved his hands, or suffered them to fall: or else the supposed criminal was conducted into a church, or placed before relics. Two dice were then produced, one of which was previously marked with a cross. Of these, one was taken up at hazard. If it happened to be the die having the sign of the cross, the accused was exempted from punishment. Finally, and, indeed, from the earliest times, the trial of the bier was used in the crime of murder; that is, the murdered person was placed upon a bier, and the supposed perpetrator made to touch the body, especially the wounds. If blood flowed out, or foam appeared at the mouth, or the dead body altered its position, the suspected person was considered guilty. Sometimes, instead of the whole body, only the hand was taken. Superstition and artifice gave to these absurd ceremonies the highest authority; and even the prohibitions of enlightened emperors from the time of Louis the Pious till the ninth century, were insufficient to abolish them. The papal chair had more influence in restraining them by frequent denunciations, and by the introduction of an improved judicial system. Indeed, many rulers and magistrates saw their absurdity. Hence, after the fourteenth century, ordeals became more uncommon, and, in the fifteenth, they were wholly put down by the increasing use of the canon law, which invented new means for the removal of suspicion, especially the oath of purgation, and still more by the universal use of the Roman law. In the sixteenth century, only the trial of the bier was used, and this continued even into the first part of the eighteenth. In consequence of the still prevalent belief in sorcery, the ordeal by cold water was also retained in the trials of witches. The supposed witches were placed in the water, and if they floated they were declared guilty. Besides this ordeal (found in Prussia in the seventeenth century, and in the neighbouring countries in the first half of the eighteenth,) there was also the weighing of witches; they were weighed, and if they were found to be uncommonly light, they were pronounced guilty. These foolish customs were gradually done away, when Thomasius succeeded in almost wholly annihilating the belief in witches. It deserves to be mentioned as a singular circumstance, that, as lately as 1728, several witches were weighed at Szegedin, in Hungary. With the exception of these few relics of ordeals, the end of the fifteenth and the beginning of the sixteenth century are to be regarded as the closing period of them in Europe. But it is to be lamented that the Roman law substituted in their place an equally horrid process in criminal cases, viz. the torture, which was originally applied only to slaves, but afterwards to freemen also. Ordeals are still found in many nations out of Europe. Thus the Senegambians, in Africa, apply a red-hot iron to the tongue of a person suspected of crime. Some negroes, on the coast of Guinea, put into the hands of the accused herbs and barks of a peculiar character, and suppose they have the property of burning the guilty. The natives of Pegu and Siam have the ordeal of cold water. The Tschuwasses and Ostiacks, in Russia in Asia, connect the trial of the consecrated morsel with an oath. The Chinese have the ordeals by fire and water; but the chief ordeals are among the Hindoos, in Congo, and other places.

ORDERICUS VITALIS, a historian of the twelfth century, of a French family, but born in England, at the age of ten was sent for education to an abbey in Normandy. He entered into the order of priesthood, but devoted his life to literary studies. He died after 1143. He wrote an Ecclesiastical History in thirteen books, published in Duchesne's *Historiæ Norman. Scrip.*, and in other collections.

ORDERS IN COUNCIL. See *Privy Council.*

ORDERS, Military. The secular military orders are societies established by princes, the members of which are distinguished by particular badges, and consist of persons who have done particular services to the prince and state, or who enjoy, by the privileges of birth, the highest distinctions in the state. They originated from the institutions of chivalry and the ecclesiastical corporations, and were, in the beginning, fraternities of men, who, in addition to particular duties enjoined by the law of honour, united for the performance of patriotic or Christian purposes. Free birth and an irreproachable life were the conditions of admission. The oldest Christian orders of which mention is made, are the order *sanctæ ampullæ*, which Clovis I. founded in the year 499, the order of the oak, which Garcias Ximenes, king of Navarre, founded in 722, and the order of the genet (*de la genette*), founded by Charles Martel, in 726; of which, however, the two first are uncertain. The first orders after these arose during the time of the crusades, and were an example for all future orders. From societies established, under certain rules, for the care of sick persons, as well as the diffusion and support of the Christian religion, first proceeded the religious military orders, of which the oldest is the order of St John of Jerusalem. Their laws were similar to the rules of the monastic orders. The pope's confirmation was essential to their establishment, and he was in a manner their head; their superiors and masters, however, were chosen by themselves, by a majority of voices. On their model the secular military orders were formed in later times, which united religious with military exercises. They also bore outward badges, as the religious orders had done in earlier times, after the example of the crusaders. This, with the religious military orders, was most commonly a cross; which the secular adopted also; differing, however, from the simple emblems of their spiritual brethren by the intermixture of worldly ornaments, by a diversity of colours, precious stones, and precious metals. The subsequent period made changes therein, and added ribands and stars. But the original pious object of these orders was also changed, and they acquired by degrees their present character. The statutes, indeed, sometimes speak of the defence of the Christian faith, and similar pious objects; but those precepts are not carried into effect.—See Perrot's *Collect. histor. des Ordres de Chevalerie civils et militaires*, &c., with forty coloured copperplates (Paris, 1820, 4to); Wippel's *Die Ritterorden, ein tabell. chronol. liter.-hist. Verzeichniss uber alle weltlichen Ritterorden* (2 vols., Berlin, 1817 and 1819, 4to).

ORDERS, in natural history, are the great divisions of classes of animals, plants, or minerals; for example, the class *mammalia*, or animals which suckle their young, is divided into ten orders, by Cuvier, viz., 1. two-handed animals; 2. four-handed animals, &c.

ORDERS OF ARCHITECTURE. See *Architecture.*

ORDERS, Religious, are associations bound to lead strict and devotional lives, and to live separate from the world. They are subjected to a perpetual obligation to their monastic vows, or the rules of their order. (See *Monastery.*) The monks and nuns of the East, particularly of the Greek church, follow the rules of St Basil, as do also the Basilians in Spain. In the Roman church, on the contrary, the fundamental rules of the monasteries were drawn up by St Benedict of Norcia, who is to be regarded as the first founder of a spiritual order. The monasteries of the Eastern churches bear the names of their common founders and guardian saints, but without being so closely united to one another as the members of spiritual orders in the West. According to the rules of St Benedict, the principal vows to be assumed by every novice after a year's probation are those which enjoin the duty of prayer at certain hours of the day, labour, perpetual celibacy, and a renunciation of the pleasures of the world, unconditional obedience to the superiors of the order, and constant residence in the monastery. As these rules and the black cowl were common to almost all the monks and nuns in the West, from the sixth to the beginning of the tenth century, the Benedictine order may be regarded as the only one existing during that period. Still, however, the monasteries belonging to it were under the government of bishops, with no common superiors, and were divided into several congregations, differing by a more or less strict observance of their rules; for example, the Benedictines of Clugny, of Monte-Casino, of Monte-Vergine, of Monte-Oliveto (*Olivetans*), of Valladolid, of St Vannes, of St Maurus, of Molk, &c. (See *Benedictines.*) The desire to give more strictness and sanctity to the monastic life, was manifest in the middle ages, by the establishment of new rules, founded on those of St Benedict. Thus arose the Camaldulians, the gray monks of Vallombrosa, the Silvestrines, the Grandmontanists, the Carthusians, the Celestines, the Cistercians, the Bernardines, Feuillans, Recollets, the nuns of Port Royal, and the Trappists, and the order of Fontevraud. The reputed rules of St Augustine were adopted by a large number of religious orders. Augustine had united only the clergy of his cathedral, and several other churches of his diocese, to lead a canonical life; that is, a life of celibacy, poverty, seclusion, and formal devotion at certain prescribed hours; but he never had an idea of founding an order of monks. Moreover, the monks, who were reckoned among the laity in the seventh century, could not adopt the rules of Augustine, which were first designed for the clergy. But, in the eighth century, they began to be viewed as members of the clerical order, and in the tenth, by receiving permission to assume the tonsure, they were formally declared clergymen. Indeed, public opinion and several papal bulls placed them, as superior in sanctity, above the secular clergy, who, for this reason, often became monks, or formed associations for the performance of monastic vows, and leading canonical lives. Of this description are the canons regular, whose constitution was formed on the rules of St Augustine; for example, the monks of St Savior in the Lateran, of the Holy Sepulchre, of St Genevieve, &c. The Præmonstratenses, Augustines, Servites, Hieronymites or Jeronymites, Jesuates, and Brigittins, are regular orders, according to the rules of St Augustine. Under the class of regular orders, but more devoted, according to the ancient ideas of monastic life, to silent contemplation, and secluded from the world, are included also the peculiarly constituted Carmelites. The Trinitarians or Mathurines and the order of Grace showed more inclination to serve the world. But love of hierarchal importance, and influence over the world, was the prominent characteristic of the Mendicants, an order of Dominicans (preaching monks, Jacobins), established in the beginning of the thirteenth century, and of the Franciscans (Minorites, Conventuals, Observantines, Cæsarines, Amadeists, nuns of St Clare, Spirituals, Eremites or Celestines, Fraticelli, Alcantarines, Cordeliers, Capuchins); from which the Minims or Paulanites, who belong to the same class, are distinguished by their devotion to a silent, contemplative life. The Dominicans and Franciscans received from the popes certain immunities which are known as the privileges of mendicant friars, and they were afterwards granted in part to the Carmelites, Augustines, Servites, and Paulanites. They consisted in freedom from all secular and episcopal jurisdiction; in the privilege of demanding alms of every body out of the monasteries; in authority to preach every where, without regard to the parochial rights of the priests; to hear confessions, to read masses, and sell papal indulgences. These immunities served as a compensation for the strictness with which they were forbidden, by their ancient rules, to possess any property. Although the establishment of new orders of monks had been expressly prohibited by some councils, several new institutions of this nature, which arose after the beginning of the sixteenth century, were able, by promising to devote their exertions to the common good, to procure the approbation of the pope, and thus to escape the prohibition, provided that they did not pass for new orders of monks, but called themselves regular canons of St Augustine, and dressed in the black garb of the secular clergy. The immense loss which was sustained by the ancient orders, in consequence of the reformation, induced the popes zealously to encourage these establishments. To this rubric belong the Theatines, the Barnabites, the Somaskians; in France, the Priests and Fathers of the Oratory, the Lazarists, Bartholomæans, Piarists, and the Brethren of Mercy. As the secluded life of the monks, soon after the origin of monasteries, had given rise to similar associations of pious females, so nuns commonly banded together as new orders of monks arose, and formed societies under similar names and regulations. There were Benedictine, Camaldulian, Carthusian, Cistercian, Augustine, Præmonstratensian, Carmelite, Trinitarian, Dominican, Franciscan, Paulanite nuns, and many orders of regular canonesses, whose monastic vows and the colour of their dresses corresponded with those of the male branches; but they were excluded from the priestly influence which the monks were able to exercise. The male branch of an order is denominated the *first order*, and the female the *second*; thus the Capuchin friars belonged to the first order, and the Capuchin nuns to the second order of St Francis. There were also congregations of nuns, who united with certain orders of monks, without adopting their names; as the Urbanist nuns, the nuns of the Conception of the Blessed Virgin, in Italy and Spain, and the nuns of the Annunciation of Mary, who belonged to the second order of St Francis, and the English sisters, who followed the rule of the Barnabites. The nuns of the penance of St Magdalen, the Salesian nuns, the celestial Annunciadæ, the Ursuline and Hospitaller Nuns, or Sisters of Mercy, are female orders existing independently of any male orders, and living according to the rules of St Augustine. Besides the nuns composing the second order, almost all the important religious orders received new accessions in the lay brethren (*fratres barbati*, or *conversi*) and lay sisters, who were taken to perform the necessary labours of the monasteries, and to manage their intercourse with the world, in order that the choristers, that is, the proper religious, who performed the appointed prayers in the choirs of the churches, might not be distracted in their studies and devotions. The first example of this arrangement was given by the order of Vallombrosa, and soon imitated in the monasteries of other orders. It became gradually an instrument of considerably increasing the power and influence of the monastic institution.

Under the name of *offerings* and *presents*, vast numbers devoted themselves, their property, and their influence, to the service of religious orders, without formally becoming members of them. Whole families, married persons of all ranks, in this way made themselves dependent on the regular clergy; and, as they imagined that they should thus gain nearer access to heaven, the connexion appeared to them desirable, though it was attended with the heaviest sacrifices. St Francis of Assisi first gave this relation of dependence a distinct form. He united the laymen, who wished to associate with the brethren of his order, without becoming clergymen, into a particular society, under the name of the *third order of Minorites*. After this model were formed (besides all the mendicant orders) the Cistercians, the Trinitarians, and the Monks of Grace of the third order, of whom only a few went into retirement, and bound themselves by solemn monastic vows. Most of the members, indeed, were laymen, who retained their civil and domestic relations, and engaged only to lead a religious life, without quitting the world. This engagement required them every day to repeat some *Ave Marias* and the *Paternoster*, and to fast at certain specified times. The members of every third order are called *tertiarians* or *tertians*, and are distinguished by their rich presents to the monasteries and mendicants of their order, and their zeal, in every way, to promote its interests. They are at liberty to wear the full dress of their order, but generally content themselves with wearing the scapulary, or girdle, like an amulet, under their ordinary garb. This badge of connexion with a religious order, to which superstition attributes a mysterious and heavenly energy, is purchased at great expense; and with its possession is commonly connected the assurance of great indulgence.

Besides these sources of income, the association of third orders affords to the first so many means of increasing its power and influence, that the care with which they are kept up, extended and favoured, can easily be accounted for. The bitterest dissensions at length arose between the different religious orders, in consequence of this association of the laity with the clergy, and could be settled only by formal compacts, marking out the limits of their possessions and their influence, and by mutual agreements respecting the deserters from one order to another. To the original intent of monastic institutions of serving God by prayer, and the world by instruction, and example, and benevolence, the policy of the popes gradually added the design of ruling nations. This is clearly shown in the constitutions of the spiritual orders. The orders first established governed themselves in -

an aristocratico-republican manner. The Benedictine monasteries were long independent of one another. The Cistercians obeyed a high council, made up of the abbot of Citeaux, as the superior, the abbots of Clairvaux, La Ferté, Pontigny, and Morimand, and twenty other counsellors. The abbot and priors of all the Cistercian monasteries were responsible to the general chapters, held at first every year, and afterwards every third year. Inferior orders, as the Carthusians, Grand-montanists, &c., with similar constitutions, had to contend with bishops also, whose ancient claims to the jurisdiction of all the monasteries in their diocese they could not so easily throw off as the Benedictines and Cistercians, who were favoured by the papal immunities.

But the *mendicant* orders, at their very commencement, placed themselves in a much more intimate connexion with the popes. Dependent solely and immediately on Rome, by virtue of the privileges which they received, they preserved the strictness of their organization with a success which, in the government of large associations of men, could be maintained only by the unity of the ruling power, and the blind obedience of the subjects. Most of the other orders soon adopted the same constitution. Accordingly, at the head of every religious order stands a general, or governor, who is chosen every three years from the officers of the institution, resides at Rome, and is responsible only to the pope. In some orders, however, he has in his attendance a monitor, who watches his proceedings in behalf of the order, and may remind him of his duty, when his proceedings are unconstitutional. The counsellors of the general government are the provincials—officers to whom is committed the supervision and government of monasteries in the separate provinces. They form, under the presidency of the general, the chapter of the whole order, and preside, as general vicars, over the provincial chapters, in which the superiors of the separate monasteries of a province take part, as members entitled to vote (*suffraganei.*) These officers have various names in the different orders, viz. *abbots*, *priors*, *superiors*, *ministers*, *guardians*, *provosts*, or *rectors*; and, in the sense of the canon law, they are *prelates*. They transact each of them the affairs of his own monastery in a chapter or assembly, with the religious in it belonging to the choir. Hence the choristers are denominated *conventuals* and *fathers* (*patres*,) to distinguish them from the inferior monks, who are called *brothers* (*fratres*,) because they have not been consecrated to the office of priests, or are only lay brethren, who perform the domestic duties of the monastery. Moreover, in the mendicant orders, none but the latter are sent out to receive contributions. The fathers alone, on the other hand, are authorized to perform the duties of the priestly office in the monastery, and in parishes under their patronage. The chapters of the individual monasteries of a province are under the provincial, as their officer in the first instance. The highest tribunal for all the members of an order is its general, who is also the president of the second and third orders. The convents of the nuns are under a similar government, only they cannot be without a provost, who, with his chaplains, performs religious services among them. If they belong to no second order, they are, like the Hospitallers, and all unprivileged monasteries, under the jurisdiction and superintendence of the bishop, or the prelate of the diocese where they reside, who is clothed with episcopal authority. Unprivileged orders and monasteries have always served less the designs of the popes, and fulfilled their original destination more faithfully (unless they have swerved from their rules,) than the privileged and strictly exclusive orders. The latter have violated more deeply the religious object of their institution, in proportion as their submission to their superiors has been more strict, and in proportion as their principal aim has been to exercise a dominion over the minds of men, to acquire political influence, and to promote, with all their power, the claims of the popes. The mendicant orders have been the most faithful, successful, and useful tools of the Roman chair, in executing its bold designs, and have therefore been justly called the *standing army of the pope*. They are by no means left without encouragement; and monks who have distinguished themselves by zeal or talent, in the service of his holiness, may expect the richest benefices from his favour. To bishoprics, which are not dependent on noble chapters, they have much readier access than the common secular clergy; and it is well known that generals and counsellors of religious orders have frequently become cardinals, and have even been elevated to the papal dignity.

The most important of all the religious orders have been the Jesuits, and their fall was the harbinger of the overthrow or limitation of the rest. In 1781, Joseph II. prohibited all dependence of the orders in his empire on foreign superiors, viz. the general and Rome; abolished all immunities, and placed the religious of every description under episcopal superintendence; he removed the foreigners among them; prohibited the admission of novices for an indefinite period; and soon after decreed the entire abolition of those orders which led a life of solitary meditation. Thus were extinguished the Trinitarians, Servites, Carthusians, and Paulanites, and nearly all the female orders in the hereditary states of Austria. Soon after, all the remaining orders, except the Benedictines of the Molk congregation, the Piarists, the Ursuline nuns, and the Brethren and Sisters of Mercy, were limited to a certain number of members to every monastery, and forbidden to admit novices for the future. Thus they were condemned to gradual decay, so that the number of monasteries in Austria, which had diminished in ten years, from 882 to 469, was doomed to go on diminishing continually from year to year. The late emperor, however, permitted the orders which devoted themselves in any way to the common good to admit novices. The Franciscans flourish, most of all, in Hungary, where the schools, in many places, are wholly under their care. In Bohemia, also, the Capuchins, Augustines, Præmonstratenses, and Knights of the Cross, maintain their monasteries by constant additions. In 1790, the national assembly of France abolished all religious orders, and assigned scanty pensions to the existing 18,000 monks and 30,000 nuns; but the pensions were soon discontinued. In Germany, where the doom of secularization, in 1803, fell on nearly all the religious establishments and monasteries, the orders declined of themselves. In the time of Napoleon, this useful arrangement was extended to Italy and Poland. In 1810, the king of Prussia declared the monasteries in his states abolished, in order to increase the provision for schools; and no monasteries were to be found in Europe, except in Russia (which tolerates the usages of all religions,) in Austria, Sardinia, Sicily, Ireland, Spain, and Portugal, when Pius VII., in 1814, decreed the restoration of all religious orders. In truth, this proclamation affected only the States of the Church, where the pope uses the religious orders to superintend public instruction and charities to the poor, for which, with his shattered finances, he is himself unable to provide. The courts of Madrid, Turin, Modena, Lucca, and Naples, followed the example of the pope, and have begun to reinstate, in their ancient possessions, the religious who had been displaced by institutions of common utility. The latest concordats of the pope with Naples, France, and Bavaria, contained stipulations in favour of the religious orders. In Bavaria, where the monasteries were abolished, some have been restored. The period of religious orders, however, is past, both in France and Germany; for in these countries the advancing spirit of the age renders all monastic institutions unnecessary; and such establishments, almost everywhere, want money and popular favour. The latest order (established by Leo XII. in 1826,) is the congregation of the Blessed Virgin Mary; and its regulations, besides the three regular vows, prescribe a fourth, viz., continuance in the connexion.—See *Histoire des Ordres monastiques et militaires*, by Heyot (Paris, 1714, 8 vols. 4to; *nouvelle edition revue et corrigée, ornée de* 812 *figures*, 1792, 8 vols., 4to;) *Pragmat Geschichte der Vornehrmsten Monchsorden*, with a preface by Walch (Leipsic, 1774—83, 10 vols.,) by Crome, rector of Eimbeck.

ORDINANCE OF THE MARINE. See *Commercial Law*.

ORDINANCES OF BILBAO is a code of commercial laws, which, for more than three centuries, was generally adopted by all the commercial tribunals of the monarchy of Spain, until it became the law of the land, and was, as such, incorporated in the compilations (*recopilaciones*) of laws. This long career of authority was terminated, however, May 30, 1829, by the promulgation of a new and far more extensive code of commercial laws, which has been put in operation in all the territories, acknowledging the government of the court of Madrid. The ancient code is therefore confined to the Spanish American republics, which have been, as yet, contented with the general laws of the mother country up to the time of their separation, in so far as they have not been modified by their independent legislatures. It may be expected, however, that the new Spanish code will be received before long by the new republics. The ordinances of Bilbao were originally compiled by the corporation of merchants of the city of Burgos. It is not apparent that any foreign code of laws was used on its formation, but, on the contrary, its features are so truly Spanish, so grave, circumstantial, and cautions, that we may be permitted to conjecture, in the absence of any historical proof to the contrary, that its enactments are mostly founded on the experience and commercial knowledge of that distinguished body of merchants, which received the sanction of Ferdinand and Isabella, by a royal rescript of July 21, 1494. The city of Bilbao was afterwards allowed on its own solicitation, to have the benefit of its provisions, by a decree of queen Juana, dated Seville, in the year 1511, which allowed the corporation of that town to exercise jurisdiction in commercial affairs by means of a tribunal established by itself. The ordinances are divided into twenty-nine chapters, of which the first eight, including the royal charter of queen Juana, treat exclusively of the organization of the corporation and the commercial tribunal, its internal regulation and duties: the following sixteen relate to the qualifications of merchants, their various relations as partners, commission merchants, and general dealers, the laws of exchange, bonds and letters of credit, the laws of bankruptcy, the duties of brokers, supercargoes, the chartering of vessels, ship's papers, shipwrecks, and salvage, average, insurance, and the allegations of captains and mariners: the last five, from the 25th to the 29th, relate chiefly to the duties of pilots, lightermen, shipbuilders, and carpenters, with some local regulations of great minuteness.

ORDINARIUS. For the *professores ordinarii* in German universities, see the article *Universities*.

ORDINARY, in the common and canon law; one who has ordinary or immediate jurisdiction in ecclesiastical matters. In England, the bishop of the diocese is commonly the ordinary. The ordinary of assizes and sessions was formerly a deputy of the bishop, appointed to give malefactors the neck-verse (i. e. the verse which was read by a party to entitle him to the benefit of clergy.) The ordinary of Newgate is one who attends on condemned culprits, to prepare them for death. The establishment of persons employed by government to take charge of ships of war laid up in harbours, is called the *ordinary*; hence a ship laid up under the care of the master attendant, is said to be *in ordinary*. A physician or chaplain statedly attending in actual service, is called a physician or chaplain *in ordinary*. For the *professores ordinarii* in the German universities, see *Universities*.

ORDINATE. See *Parabola*.

ORDINATION; the consecration of a Christian minister or priest for his office, his admission into the number of the clergy. With many Protestant sects, ordination is merely a solemn act, by which the person to be ordained is publicly declared by the ordainers fit for preaching, and to be henceforward one of the clergy or ministry of their sect; the ordainers accompanying the act by prayers, and by expounding to the candidate for ordination the sacred duties which he undertakes. The English church considers ordination as a real consecration, the power of communicating which has descended from Christ through the apostles and bishops; and the American episcopal church therefore sent to England, after the revolution, to obtain the consecration of bishops, through whom the power of ordination is descended to the episcopal clergy of the United States. (See *England, Church of*; close of the article.) For ordination in the English church, subscription to the thirty-nine articles, acknowledgment of the temporal and spiritual supremacy of the king, and the declaration that the Book of Common Prayer contains nothing contrary to Scripture, are requisite. The ceremony of ordination is performed by the bishop by the imposition of hands on the person to be ordained. In the English church, and in most Protestant countries, where the church is connected with the state, ordination is a requisite to preaching; but in some sects ordination is not necessary for that purpose, although it is considered proper, previous to the administration of the sacraments by the preacher. The Catholic church, both Roman and Greek, has distinguished, ever since the third century, eight orders (*ordines*,) each of which is conferred with peculiar solemnities. The lower or petty orders of the ancient church were the *ostiarii*, or door-keepers; the sacristan (sexton,) who tolled the bell, opened the church, &c.; the *lectores*, or readers, who read passages of the Bible to the people; the *exorcists*, whose office it was to drive out evil spirits, and to assist in the ceremony of baptism, by reading the formula of exorcism; and the *acolythi* (q. v.). These four minor orders are generally conferred on the same day by the bishop. They are not consecrations, do not confer a spiritual dignity, nor require celibacy; but it is necessary to have passed through them in order to obtain the others. The higher orders require celibacy, authorize the wearing of the sacred vestments and the tonsure, and stamp the individual with an indelible character (*character indelibilis*.) The lowest of these is the subdeaconship, the duties of which are the care of the sacred vessels, the decoration of the altar, &c., and the chanting of the epistle to the society. The deacons are one degree higher, who serve during mass (distribute the wafers,) administer baptism, preach, chant the gospel to the people, and are distinguished from the subdeacons by wearing the *stola* and *dalmatica* (q. v.). Still higher are the priests or presbyters, who administer all the sacraments except confirmation and ordination, and wear mass vestments when celebrating mass. These three degrees are also usually conferred by the bishop on one day. The highest degree is the episcopal ordination, which authorizes the bishop to administer the sacraments of confirmation and ordination. (See *Bishops*.) Bishops are consecrated by archbishops, and the latter do not receive any new consecration, but are installed archbishops by receiving the *pallium* from the pope. The Catholic dogma of ordination is founded on John xx. 21 and 22, where Christ says to the apostles, "As my father hath sent me, even so send I you. And when he had said this, he breathed on them, and said unto them, Receive ye the Holy Ghost." The spiritual power of ordination it considers as descended from the apostles through the bishops.

ORDNANCE. See *Cannon*, *Artillery*, *Gunnery*, *Howitzers*, *Mortars*.

OREADS. See *Nymphs*.

OREGON; the name by which that portion of the territory of the United States of America which lies west of the Rocky mountains, is commonly known. It forms a distinct geographical region, but has no independent official existence. Its western and eastern limits are clearly defined by the Rocky mountains and the Pacific ocean, its southern by the boundary line between Spain and the United States, being on the parallel of 42° from the mountains to the ocean. The northern boundary is unsettled, but is often laid down on the maps as formed by the parallel of 54° north, because, by the convention of 1824, between Russia and the United States, it was agreed that the subjects of the former should form no settlements to the south of that parallel. This region is claimed by the United States on the ground of priority of discovery, examination, and occupation. It was discovered by an American, Gray, who entered the mouth of the Columbia (q. v.), in 1790; examined by Lewis and Clarke, by order of the government in 1805; and, in 1811, a settlement was formed by American citizens at the mouth of the Columbia, called *Astoria*, which was taken by the British in 1813. The British government denies the justice of this claim on the part of the United States, north of 42°; and, by a convention made in 1818 (renewed in 1827) between the parties, it was agreed that all the territory west of the Rocky mountains should be open for the space of ten years to both. The breadth of this region, from east to west, is from ten to fifteen degrees of longitude (400 to 650 miles;) the interior is mountainous, but the soil in general is fertile, and the climate agreeable, being much milder than that of the same parallels east of the mountains. The principal river is the Columbia.

OREGON RIVER. See *Columbia River*.

ORELLANA, FRANCIS; a Spanish officer, who is regarded as the discoverer of the great river of the Amazons, in South America. This river is sometimes called after his name.

ORES. Metals, when found in a state of combination with other substances, have the name of *ores*. They are in general deposited in veins of various thickness, and at various depths in the earth. The mode of obtaining them is to penetrate from the surface of the earth to the vein, and then to follow it in whatever direction it may lie. The hollow places thus formed are called *mines*, and the men employed in them are denominated *miners*. When the veins are at a great depth, or extend to any considerable distance beneath the surface of the earth, it is necessary, at intervals, to make openings, or *shafts*, to the surface, for the admission and circulation of air; and also to draw off the water, which collects at the bottom, by means of drains, pumps, or steam-engines, as the situation or circumstances require. After the metallic ores are drawn from the mine, they, in general, go through several processes before they are in a state fit for use. Some of these are first washed in running water, to clean them from loose, earthy particles. They are then piled together with combustible substances, and burned, or roasted, for the purpose of ridding them of the sulphur or arsenic with which they may happen to be combined, and which rises from them in a state of fume or smoke. Thus having been freed from impurities, they undergo the operation of melting, in furnaces constructed according to the nature of the respective metals, or the uses to which they are subsequently applied. See *Mine*; also *Iron*, where the treatment of iron ores is particularly described.

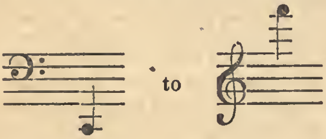
ORESTES, son of Agamemnon and of Clytemnestra, the hero of several Greek tragedies, in which he is represented as the deliverer of his sister, and the avenger of his father, by becoming the murderer of his mother. Of the pieces of which his history was the subject, there remain the *Choëphori* and the *Eumenides* of Æschylus, the *Electra* of Sophocles, and the *Orestes* and *Iphigenia in Tauris* of Euripides. Orestes, saved by his tutor, with the assistance of Electra, from the fate of his father, was brought up in the house of his uncle Strophius, prince of Phocis, and formed with his son Pylades that intimate friendship which has become proverbial. Called upon by the Delphian god to avenge his father, he hastens back to Mycenæ. To conceal himself, he has recourse to artifice. His tutor and Pylades appear with an urn, which they pretend contains the ashes of Orestes. Clytemnestra hears the news of her son's death with a joy which she can hardly conceal; but she soon falls under his dagger. Ægisthus undergoes a similar fate. But, according to the notions of the Greeks, the murderer of his mother became a prey to the Eumenides. These terrible goddesses unrelentingly pursue the unhappy prince, and at last drive him to madness. He flies to Delphi, still pursued by the avenging deities; but an oracle of the god informs him that his torments will cease when he shall have carried back the statue of Diana from Tauris to Argos. Upon this information Orestes sails with Pylades to Tauria. His sister Iphigenia, an unknown stranger, was here living as a priestess of Diana. An old law commanded that every stranger should be sacrificed to the goddess. Iphigenia was about to offer up her brother; but a recognition takes place, they seize the image of Diana, and, together with Pylades, come to Argos. The infernal deities were now appeased. Married to Hermione, daughter of Menelaus, Orestes ruled over his paternal kingdom of Mycenæ, and over Argos, upon the death of its king, who left no heirs. An oracle induced him to travel into Arcadia, where he lived in the city of Orestia, and died at a very advanced age, from the bite of a snake. His bones were afterwards carried to Sparta.

ORFORD, EARL OF. See the two articles *Walpole*.

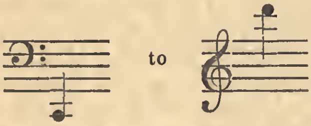
ORGAL, or ARGAL. See *Argal*.

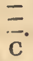
ORGAN. This word, as applied to natural bodies, signifies a part, or, if we may so say, a group of parts of an organized body, that is, such a body as is endowed with an inherent life, and power of activity, and reproduction. The precise idea of organ depends upon the idea of life, the limits of which cannot be accurately defined. The point at which life ceases is not agreed upon. All allow that plants live. Some philosophers even attribute life to crystals, since they follow inherent laws; but, generally speaking, the expression "organic world" comprises only the vegetable and animal world. Man stands on the highest step of organic life among all the beings with which we are acquainted; he moves with liberty and consciousness; his organization is the most complicate, delicate, and perfect. The various gradations of organized being, from man, through animals, plants, and down to crystals, furnish a most curious and interesting subject of study. The word *organ*, as applied to a group of parts, denotes that they have a particular office, and, in some considerable degree, an independent action, as when we speak of organs of taste, hearing, digestion, &c.

ORGAN (from the Greek *οργανον*); a musical instrument, which contains, within a case, a number of pipes, harmonically arranged, into which wind is driven by bellows (hence also the name *wind-organ*, *οργανον πνευματικον*,) and which yield tones when the player touches the keys connected with them. The chief parts of an organ are the pipes, which are of metal (tin and lead) or wood, whose length and diameter determine the depth or height of the tone (they are sometimes four, eight, sixteen feet long;) the registers or stops, by which the entrance of wind into a pipe is regulated; the manual or key-board, consisting of one or several rows of keys; the pedal, the bellows, the wind-trunk, wind-chest, sound-boards, &c. The greatest compass of the manual is



and that of the pedal



Most organs, however, only extend in the manual to . The advantage which the organ, like every other instrument with a key-board, has, viz. that melody and harmony can be produced at the same time, united with the quantity and variety of its voices, makes it the most complete of musical instruments, and gives it a fulness and magnificence of harmony, which is sufficient to compensate for the want of those fine gradations of strength and delicacy of tone which the violinist, for instance, can produce, and which the Frenchman Grenie tried, in 1811, to give to the organ, by his *Orgue expressive*. Besides, the organ has the advantage, that each tone may be continued in equal strength for any length of time, so that it is peculiarly proper for the grave, solemn, *legato* style, as in church music, and for the most complicated harmonies; but for this very reason it requires a player who is familiar with the character and compass of harmony, and possesses the skill to arrange with rapidity his musical ideas, and to choose the best means for their execution. A good player on the piano, therefore, is not necessarily equally skilful on the organ, and the very mode of fingering differs much, on account of the vastly different character of the instruments. An *organ*, when complete, is of threefold construction, and furnished with three sets of keys; one for what is called the *great organ*, and which is the middle set; a second (or lower set) for the *choir organ;* and a third (or upper set) for the *swell*. In the *great organ*, the principal stops are the two *diapasons*, the *principal*, the *twelfth*, the *fifteeenth*, the *sesquialtera*, the *mixture*, or *furniture*, the *trumpet*, the *clarion*, and the *cornet*. The *choir organ* usually contains the *stopt diapason*, the *dulciana*, the *principal*, the *flute*, the *twelfth*, the *bassoon*, and the *vox humana*. The *swell* comprises the two *diapasons*, the *principal*, the *hautboy*, *trumpet*, and *cornet*. Besides the *complete organ*, there are other organs of less size, and more limited power, adapted to church, chapel, and chamber use. Some persons, particularly Jews, suppose, but without foundation, that the organ was used even in the temple of Solomon. Some derive its origin from the bagpipe; others, with more probability, from an instrument of the Greeks, though a very imperfect one,—the *water-organ*,—as it is known that the first organs used in Italy came thither from the Greek empire. It is said that pope Vitellianus (died 671) caused organs to be set up in some Roman churches in the seventh century. (See *Cecilia*.) Organs were at first portable. The organs now in use are considered an invention of the Germans; but respecting the time of this invention opinions differ. It is said by some, that, as early as 1298, the cathedral of Strasburg lost an organ by fire, which seems not to have been a "water-organ." Others assert, that the first organ of the kind now in use was built in the year 1312, by a German at Venice. It is certain that the use of organs was not common before the fourteenth century. At the beginning, the instrument was very imperfect; it was useful only in fixing the pitch of the voice parts, which was effected by touching, or rather pressing down, a key two inches wide, and pretty thick, when a hymn was sung. The first organs seldom had more than two keys, which were so large and difficult to be moved, that probably this circumstance gave rise to the expression "to thump the organ." They were portable, and had, perhaps, no register. The keys in time became smaller, and between the diatonic tones the semitones were inserted. The left hand, also, was occupied by the addition of a new key-board. In 1444, H. Drossdorf of Mayence built a great organ, with a pedal. According to others, Bernhard, a German, organist to the doge of Venice, built the first organ with a pedal, between the years 1470 and 1480. The largest organ known till the end of the fifteenth century, was that in the church of St Blasius, at Brunswick, built by H. Kranz, in 1499. Improvements of the organ succeeded quickly in the sixteenth century; the division of all the pipes into different stops was now invented, and the tone of the instrument was adapted to the tone of the choir. The bellows were particularly improved as, till then, twenty to twenty-four pair had often existed in one organ, requiring from ten to twelve men to tread them. But the present degree of perfection could not be obtained until Christian Forner had invented, in the seventeenth century, the *wind-chest*, by which an equal pressure of wind can be obtained in all the bellows. The largest organ is that in St Peter's church in Rome: it has a hundred stops. The great organ in Gorlitz (built in 1703) has fifty-seven stops and 3270 sounding pipes. The organ in the minster of Strasburg has 2136 pipes; that at Ulm, in Suabia, over 3000 pipes. In Rothenburg, on the Tauber, and in Halberstadt, there are organs on which three players may perform at the same time. The organ in the church of Mary Magdalen, at Breslau, has 3342 pipes. The largest metallic pipe weighs three and a half cwts., is twelve and a half ells long, and fourteen inches in diameter. Vogler has attracted much notice by his system for simplifying the construction of organs. An organ of pasteboard, at Saintes, built by father Julian, produces agreeable tones. In Paris, some time ago, an organ was built of playing cards. We have seen an instrument with a key-board like that of an organ, the tones of which, however, were produced by the friction of wood; and the newspapers lately announced the invention of an instrument which produces agreeable sounds by the striking together of flints, made by M. Backstein of Cassel, who calls this instrument *saxamelodicon.*

The *hand* or *barrel organs* consist of a movable, turning cylinder, called a *barrel,* on which, by means of wires, pins, and staples, are set the tunes it is intended to perform. These pins and staples, by the revolution of the barrel, act upon the keys within, and give admission to the wind from the bellows to the pipes. The *hand-organ* is generally portable, and so contrived that the same action of the hand which turns the barrel, gives motion to the bellows. For *water-organ,* see *Hydraulicon.*

ORGANIC LAWS is the name given in France, and also in Germany, to such laws as directly affect the fundamental political organization of a country. Thus the law which changed the provisions in the constitution of the United States respecting the election of the president and vice-president (see *Election*), would be called by the French an *organic law;* and thus the *senatus consulta,* which declared Bonaparte consul for life, and afterwards emperor, were called *organic senatus-consulta.* However, the French apply this term not only to those laws, which, at least in many cases, would be called by us *reforms of the constitution,* but also to every law which, as the *Encyclopédie Moderne* expresses it, is the application of the theory contained in the fundamental law as charter. The words are these: *La loi fondamentale quel que soit son nom, n'est qu'une proclamation de principes. Les lois organiques sont l'application de cette théorie. Le principe est dans la charte, la garantie dans la loi organique.* The fundamental law, however called, is but a proclamation of principles. Organic laws are the application of this theory. The principle is in the charter, the application in the organic law.

ORGANIC REMAINS; those animal and vegetable substances which are contained in rocky strata, or found loose in the earth. The study of them has sometimes been denominated *oryctology.* Xenophanes, more than 400 years before Christ, was led to the belief of the eternity of the universe, by discovering the remains of different marine animals imbedded in rocks and under the surface of the earth. Herodotus ascertained the existence of fossil shells in the mountains of Egypt, and was thereby induced to believe that the sea must have once covered those parts. In the pyramids of Egypt, mentioned by this author, and which were built at so early a period that no satisfactory accounts could be derived from tradition concerning them, the stones were found to contain the remains of marine animals, and particularly of such as exist no longer in a recent state, and differ essentially from all known animals. These were supposed by Strabo, who saw the fragments of these stones lying around the pyramids, to be the petrified remains of the lentils which had been used for food by the workmen. In the works of Pliny many fossil bodies are mentioned, particularly the bucardia, resembling an ox's heart, but which was, doubtless, a cast formed in a bivalve shell; glossopetra, bearing the form of a tongue, and supposed to fall from the moon when in its wane; hammites, resembling the spawn of a fish; horns of ammon, resembling in form the ram's horn; lepidotes, like the scales of fishes; meionites, bearing a resemblance to the seeds of the poppy; brontiæ, looking like the head of a tortoise; spongites, which resembled sponges; and phycites, sea weeds and rushes. Modern investigations have brought these remains to light, as existing in the greatest variety of forms, in immense quantity, and with the widest possible distribution. The lowest and most level parts of the earth, when penetrated to a very great depth, exhibit strata containing innumerable marine productions. Similar formations compose hills, and even mountains, in which the shells are so numerous as to constitute the main body of the rock; and they are often in such a perfect state of preservation, that the smallest of them retain their most delicate processes; even the colours which decorated their external surface are found nearly in their original beauty; and, in innumerable instances, shells have been discovered, exhibiting all those tints and reflections, which are common to the pearlaceous species. Every part of the globe, of any considerable extent, presents the same phenomenon; and, what is at length perfectly established respecting these productions, they differ in specific, and often in generic resemblances, from the shells of the present day, and the differences between the extinct and living shells increase in proportion as we descend through the successive series of deposits that overspread the surface of the earth.

But it was reserved to Cuvier, the greatest of comparative anatomists, to throw a clear light over these interesting remains; who, by much time and high talent devoted to the investigation, fully illustrated their organization, and the place which they naturally occupied in the scale of being. That great adept, on investigating this obscure subject, clearly demonstrated, that from the character of a single limb, and even a tooth or bone, the form, proportions, and articulation of the other bones, and stature of the whole animal, may be inferred. This general law holds good among existing animals; and from the bones, an expert anatomist may not only decide the general form of an entire fossil skeleton, but also the character of the muscles by which it was invested, and by which every bone was moved; and even the habits, haunts, food, and general mode of life of those beings which existed on the earth's surface and in its waters, prior to the creation of man.

"Concurrent with this rapid extension of our knowledge of the comparative anatomy," says Buckland, "of the ancient inhabitants of the earth, has been the attention paid to fossil conchology,—a subject of vast importance in investigating the records of the changes that have occurred upon our globe."

And no less necessary is a knowledge of the plants and vegetation which coexisted with these ancient animals. This kingdom of nature has, however, till lately, been greatly neglected. Brongniart has done much towards forwarding this interesting topic; and the present investigations of professor Linley, and other expert botanists, are likely to establish correct data respecting fossil vegetables. Mr William Nicol of Edinburgh, has lately made some admirable discoveries on the structure of fossil trees, of which he has produced some fine sections, and by comparing them with recent woods, has completely identified their structure, and been able to place each fossil in its true position in the vegetable kingdom. A full account of these discoveries is to be found in Witham's work on The internal structure of Fossil Vegetables.

Since the commencement of the present century, very great progress has been made in modern geography, which may be traced to the more precise knowledge of Organic Remains; for we find certain families of animals pervading strata of every age, and possessing the same generic forms, which are to be found among existing animals. There are, however, other families, both animal and vegetable, which are confined to particular formations, where whole groups of these have been annihilated, and have been replaced by others bearing widely different characters; and the changes of genera and species are still more frequent. Zoology and botany have therefore become indispensable studies to the geologist. Before the importance of organic bodies in discriminating the different formations was appreciated, it was considered that a knowledge of mineralogy was sufficient; but the mineral character and composition of which the strata of the earth's surface are composed, very inadequately assist us in our investigations, for we find a similar succession of beds of sandstone, clay, and limestone, irregularly repeated, not only in different, but also in the same formations. Thus the same formation, which constitutes the argillaceous deposits of the London clay in England, exhibits at Paris the sand and freestone, of what is termed the calcaire grossier; whilst the resemblance of their organic remains proves their deposition to have been of the same epoch, notwithstanding the difference in the character of their mineral ingredients.

"The secrets of nature, that are revealed to us by the history of Fossil Organic Remains, form perhaps the most striking results at which we arrive from the study of geology. It must appear most incredible to those who have not minutely attended to natural phenomena, that the microscopic examination of a mass of rude and lifeless limestone, should often disclose the curious fact, that large proportions of its substance have once formed parts of living bodies. It is surprising to consider, that the walls of our houses are sometimes composed of little else than comminuted shells, that were once the domicile of other animals, at the bottom of ancient seas and lakes."

It has been lately ascertained by Mr Ehrenberg, that the rocks of homogeneous appearance, which are not very hard, friable, even fissile, entirely formed of silex, and which are known by the name of Tripoli, more or less solid, are entirely composed of the exuviæ, or rather of the perfectly ascertained skeletons of infusorial animals of the family *Bacillariæ*, and of the genera, *Gomphonema*, *Synedra*, *Gallonella*, &c. Professor Jameson and Mr Nicol have examined carefully, characteristic specimens of polishing slate, and found in them numerous remains of lacustrine infusoria, thus confirming the discovery of Ehrenberg, in so far as applies to the Polier-slate.

We may inform those who have not made geology a study, that the word *Formations* is understood to apply to certain groups of strata which have been associated together for the sake of ready and simple classification, and of avoiding the perplexity otherwise arising from their numerous subordinate beds. But for this comprehensive arrangement, it would be difficult to distinguish, with sufficient precision, the separate members of the secondary strata. As each formation is in general made up of several members, so also the latter are composed of an infinite number of beds; and those beds, again, of innumerable finer lamina; but the whole series being found to possess some common character, some obvious relations, or some general similarity in organic accompaniments, or circumstances of position, they are appropriately classed under one common denomination.

It is in strata of the TRANSITION series that the first remains of organized beings begin to be found, but these are of the most simple construction in their parts, especially in the inferior regions of this series. But we find in them the remains of the four established divisions of the animal kingdom; viz. *Vertebrata*, *Mollusca*, *Articulata*, and *Radiata*; thus proving these great divisions of animals to have been coeval with the beginning of organic life on this globe. But the highest degree of vertebral animals, which have yet been found in the series, is fishes.

In the SECONDARY strata, the only terrestrial animals which have yet been ascertained, are some small marsupial quadrupeds allied to the opossums; these are sparingly to be met with in the oolite formation at Stonefield, near Oxford. Besides these, Cuvier discovered two other small species in the gypsum of the Tertiary formations of the Paris basin, thus proving that animals of this order were, contrary to what was supposed, in reality antecedent to all other mammifera on our globe.

The secondary strata present us with a series of Saurian reptiles, principally of a gigantic size; many of them marine; others were amphibious, while a third series were terrestrial, occupying savannas and jungles.

In the TERTIARY series we find that the fossil remains, of both animals and vegetables, are much more numerous, and greatly more perfect in their organization, and bring us down, by a natural transition, to those of our own times. Cuvier and Brongniart were the first who made us acquainted with that important portion of the tertiary series, which form the deposits above the chalk at Montmartre, near Paris. This at first was supposed to be peculiar to that locality, but which later investigations have proved to stretch extensively over the whole of our globe, and presenting us with incontestable evidence, of not less than four distinct periods of succession, indicated by changes in the nature of the organic remains imbedded in those strata. Every one of these periods evinces an increasing provision for the spread of animal existence, from the immense quantities of bones and shells found in the strata of these epochs.

Deshayes and Lyell have considered it necessary to institute four divisions of the formations of the tertiary series. The first of which they term the EOCENE, signifying the *dawn* of the existing state of animal creation. The London clay and calcaire grossier of Paris are examples of the older tertiary formations, and contain but a very few species of shells, of which we have living examples. The second appellation is the MIOCENE, in which are included formations of strata containing shells, the minor proportion of which consists of recent species: for example, the shells of Vienna, Turin, and Bourdeaux. The third and fourth are the older and newer PLIOCENE, which, taken in conjunction, contain shells, nearly the whole of which are to be met with in a recent condition, but more abundantly in those of the newer Pliocene; in this division are the later formations of Sicily, Tuscany, and Ischia; while the subapennine marine formations, and English crag, are included in the older Pliocene. These we have enumerated under their proper head. Alternating with these four great marine formations, there intervenes a fourfold series of strata, containing shells which must have inhabited fresh water, associated with numerous bones of terrestrial and aquatic mammalia. The construction of these bones and form of the shells clearly indicate, that their functions, in a living state, must have been exercised in a manner similar to those now existing.

Having thus given a brief review of the progress of discovery in Fossil Organic Remains, we shall now discuss the subject in a systematic form, following the descending scale of being, as in our other treatises.

Many species of animals have existed on our globe of which we have now living examples. Many controversies have arisen, whether species have existed since the first formation of animals, or whether they were more simply formed at first, and have gradually improved by reproduction, and assumed more enlarged and more perfect forms with new specific distinctions; we look upon the last theory as absurd, and with Mr Lyell, we are distinctly of opinion, "that species have a real existence in nature, and that each was endowed, at the time of its creation, with the attributes and organization by which it is now distinguished," whether in a fossil or recent state; and M. de la Beche says, "there can be no doubt that many plants can adapt themselves to altered conditions, and many animals accommodate themselves to different climates; but when we view the subject generally, and allow full importance to numerous exceptions, terrestrial plants and animals seem intended to fill the situations they occupy, as these were fitted for them; they appear created as the conditions arose, the latter not causing a modification in previously existing forms productive of new species."

Although the whole species of Fossil Organic Remains, which have been found in the older formations, are specifically distinct from existing individuals, yet none of their characters are such as to require the institution of a new class for their reception; for although many of them differ in their generic distinctions, yet the same general plan of structure connects them with one or other of these classes, which, we have said, seem to have been at first created.

CLASS I.

FOSSIL MAMMALIA.

ORDER I.—BIMANA, MAN.

We beg to refer to the characters of this class and its orders, under the article Mammalia.

In all the formations, there has not been a single case discovered of the remains of the human race; and we must therefore conclude, that the numerous examples which we have of animal remains in the earth's strata, belong to races of beings which existed and died before the creation of man.

There is one example of the remains of man being found imbedded in a rock, which, however, is no proof against the fact we have just stated. There is a number of scattered human bones which were detected in a limestone rock, on the shore of the island of Guadaloupe. But we have no reason for supposing these bones to be of high antiquity, because the rock in which they occurred is composed of consolidated sand, and contains shells of species now inhabiting the surrounding sea and land, as well as fragments of pottery, arrows, and hatchets of stone. An entire skeleton was found at one spot, which is now preserved in the British museum. This was laid out in the usual position of burial; and another was found in the softer sandstone, and appeared to have been buried in the sitting posture, customary among the Caribs. The bodies thus differently interred may have belonged to two different tribes. General Ernouf also explains the occurrence of the scattered bones, by reference to a tradition of a battle and massacre on this spot, of a tribe of Gallibis by the Caribs, about the year 1710. These scattered bones of the massacred Gallibis were probably covered, by the action of the sea, with sand, which soon after became converted into solid stone. Examples of stone of this kind being formed in a very few years, are very frequent. On the west coast of Ireland, near Kilenny harbour, a sand bank, which is surrounded by the sea at high water, is at this time employed by the natives as a place of interment.

There have also been found in caverns in the vicinity of Liege, various bones of the human species, supposed by some to have belonged to individuals whose existence was coeval with the bones of other mammalia, discovered in the same locality. These human bones, however, have been seen, and carefully examined, by professor Buckland, and he is distinctly of opinion that they do not belong to a date by any means so ancient as those of the quadrupeds. Associated with these human bones are rudely formed flint knives, as well as other implements of bone and flint, which must have been left there by uncivilized tribes, who have inhabited the caverns. The human bones, besides, are in a much better state of preservation than the animal remains. We may, therefore, safely affirm, that man has not yet been discovered in a true fossil state.

ORDER II.—QUADRUMANA, APES AND MONKEYS.

Not a single species of quadrumanous animals has been found in a fossil state.

ORDER III.—CARNASSIERS, BATS, &c.

Bats have been found in the gypsum of the Paris basin.

ORDER IV.—INSECTIVORA.

Family II.—Carnivora.

In this family there have been discovered a large wolf, differing from any existing species; a fox, a large species of coati (of the genus Nasua) found only in a recent state in the warm climates of America; a racoon and gennet. All these have also been detected in the gypsum of Paris.

In the cave at Kirkdale, professor Buckland discovered the bones of hyænas, tigers, and bears. All the bones and teeth of these fossil animals differ materially from the existing races We have given examples of some of these. In plate 65, fig. 1, is the hindmost grinder of the upper jaw of the bear, fig. 2 the foremost upper grinder, fig. 3 the hindmost grinder of the lower jaw, fig. 4 the middle upper grinder, and fig. 5 the foremost lower one. Fig. 7 the lower jaw of the hyæna. This species must have been very numerous, for it is found not only in the caverns, but also in the alluvial strata, associated with bones of extinct elephants. A species of hyæna, now extinct, must also have existed in different parts of Germany, as bones of it have been found in the cave of Gayleureuth, in the sand hills near Eichstadt, and also in Baumann's Hohle, and in other spots, as well as in France. Fig. 30 is another fossil tooth of the hyæna, probably of a different species from those figured above. Fig. 28 is the molar tooth of a wolf, fig. 31 is the tusk of a fox, and fig. 32 is the great molar tooth of the same; fig. 29 is the molar tooth of a tiger. The supposed antediluvian fissures of rocks, chiefly in the mountain limestone, red sand-stone, and oolite, are the principal receptacles where these remains are found; fig. 15, canine of a tiger.

ORDER V.—MARSUPIALIA, OPOSSUMS, &c.

A small opossum, nearly allied to the existing North American species, has been detected in the gypsum of Paris. The fossil genera are very numerous of this order.

ORDER VI.—RODENTIA, BEAVERS, &c.

Animals of this order have been ascertained in the Pliocene series, as well as in the preceding period. Pl. 65, fig. 33, the molar teeth of a rabbit; fig. 34 the molar tooth of a water-rat; and fig. 35, the incisors of the same.

ORDER VII.—EDENTATA.

One of the most remarkable animals of this order is the great Megathurium (M. Cuvieri) pl. 65, fig. 6. See Mammalia, page 650, and Megathurium.

ORDER VIII.—PACHYDERMATA.

In the Calcaire Grossier of Paris, there are some examples of the occurrence of the remains of Palæotherium; but, in the first great fresh water formations of the Eocene period, there have been discovered nearly fifty extinct species of mammalia, most of which belong to the Pachydermata, and are of the orders Palæotherium, Anoplotherium, Lophiodon, Anthracotherium, Cheroptomus, and Adopis. Pl. 65, fig. 38. The little Palæotherium, pl. 65, fig. 12, exhibits the outer surface of the fourth molar tooth of the lower jaw of the Palæotherium; fig. 13 the inner surface. Pl. 52, fig. 43, the greater Anoplotherium, as it is supposed to have been with its muscles; and pl. 65, fig. 20, represents the skeleton of the common species (*A. Commune*); fig. 10 the antepenultimate lower grinder of the Anoplotherium; fig. 11 the grinder which stands before the foregoing. We have given the generic characters of these in Mammalia, page 651.

GENUS LOPHIODON.

The animals of this genus are nearly allied to the tapier and rhinoceros, and in some points to the hippopotamus, and are nearly connected with the Palæotherium and Anoplotherium. Fifteen species of this genus have been ascertained.

GENUS ANTHRACOTHERIUM.

These animals are so designated, from having been first met with in the Tertiary coal, or lignite of Cadibona, in Liguria. Some of the species approximate closely to the hog, and others are nearly allied to the hippopotamus.

GENUS CHEROPTOMUS.

This animal was most nearly connected with the hogs, and somewhat approaching to the Babiroussa, forming a connecting link between the Anoplotherium and Peccary, the *Dicotyles* of Cuvier.

GENUS ADOPIS.

This animal must have been formed nearly like the hedgehog, but thrice the size of that creature, and appears to have been the connecting link between the Pachydermata and the Insectivorous Carnivora.

GENUS MASTODON.

See Mammalia and Mastodon. Pl. 52, fig. 42.

GENUS ELEPHAS.

See Mammalia and Elephant. Pl. 65, fig. 27. The remains of fossil elephants were found in the cave at Kirkdale, by Buckland; but probably of a different species from that which we have represented. It is on the confines of the icy sea that we most frequently meet with the remains of those stupendous animals. Indeed, from the mountains by which Asia is bounded, to the frozen shores of the ocean, all Siberia is filled with immense bones. Pallas tells us, that on the banks, or in the beds of every river in Asiatic Russia, from Tanais to the promontory of Tchutchis, there are to be found the bones of elephants. An entire elephant was found on the banks of the river Alaseia, which flows into the icy sea. It was in an upright posture, nearly entire, with its muscles in complete preservation, and covered by its skin, and to which some long hairs were still attached. So late as the year 1799, a Tongoose fisherman, noticed on the borders of the icy sea, near the outlet of the river Lena, in the midst of fragments of ice, a fossil elephant, but so much enveloped, that he could neither ascertain what it was, nor disengage it. Next year it was partially visible; and towards the end of the following summer the whole side, and one of the tusks were disengaged; and, on the fifth summer, the animal was thrown upon a sand bank, and he cut off its tusks, and sold them for fifty rubles. The flesh of the animal was still fresh, and was eaten by the dogs of the Yakoots and wild beasts. Such was its state of preservation, that the pupil of the eye was distinctly visible. The neck was provided with a long mane, and the skin was covered with black hairs, and a reddish wool. The bristles and hair weighed upwards of thirty pounds. The tusks were more than nine feet long, and the head, independent of them, weighed upwards of four hundred pounds. It was a male animal. The skeleton complete was collected by Mr Adams, and sold to the emperor Alexander for eight thousand rubles. We have represented the lower jaw of this animal at fig. 37.

GENUS DINOTHERIUM.

This, the most gigantic of all terrestrial mammalia, forms an intermediate link between the tapier and mastodon. The structures of the molar teeth of this genus are most nearly allied to those of the tapier, with two very large tusks situate at the anterior extremity of the lower jaw, and curved downwards like those of the upper jaw of the walrus, presenting a deviation from those of all other quadrupeds. The only use to which these tusks could have been applied, seems to have been to enable them to rake up from the bottom large aquatic plants; as it is probable that this was a strictly herbivorous animal, and that it was amphibious, and lived in fresh water lakes. It would be difficult to imagine how a terrestrial animal could sustain its head in walking, with two such enormous tusks; and it is still more difficult to conceive how the muscles of the lower jaw could support such a weight. But by supposing it an aquatic amphibious animal, we can easily see that this weight would be supported by the density of the medium. Buckland says these tusks "may also have been applied with mechanical advantage to hook on the head of the animal to the bank, with the nostrils sustained above the water, so as to breathe securely during sleep, whilst the body remained floating, at perfect ease, beneath the surface. The animal might thus repose moored to the margin of a lake or river, without the least exertion, the weight of the head and body tending to fix and keep the tusks fast anchored in the substance of the bank; as the weight of the body of a sleeping bird keeps the claws clasped firmly around its perch."

The gigantic Dinotherium (*D. giganteum*) was the largest quadruped which has been known to exist; measuring the great length of eighteen feet. The structure of its shoulder blade, or scapula, which, in form, is very like that of the mole, seems to indicate that the fore leg was adapted to co-operate with its enormous tusks, in digging large vegetables from the bottom of lakes. We have given a representation of the under jaw and tusks of this animal, pl. 65, figs. 85 & 9.

GENUS RHINOCEROS.

The number of bones of the rhinoceros, which have been discovered in Germany, Siberia, and other parts of Europe, is very considerable. An entire animal of the fossil species, which differs materially from any of those still existing, still retaining its skin, fat, and muscles, was dug up near the Wilhoui, on the east of Siberia, from under a hill, which is covered with ice the greater part of the year.

GENUS EQUUS.

The horse is one of those fossils which belong to the Pliocene periods of formation.

ORDER IX.—RUMINANTIA.

We find animals of this order in almost all the newer formations. Oxen and deer are not unfrequent.

GENUS CERVUS.

The most remarkable animal of this genus, which has been found in a fossil state, is the elk of the isle of Man, which is also common to Ireland. A fine specimen of this gigantic animal is in the royal museum of the college of Edinburgh, almost perfect. It was dug up in the parish of Kirk Ralaft, Isle of Man, and secured for the university by the late duke of Atholl. It was found imbedded in loose shell-marl, associated with numerous roots and branches of trees. Over the marl was a bed of sand; above the sand a stratum of peat, principally composed of small branches and decayed leaves; and on the surface of all the common alluvial soil of the country. Its size is greatly superior to the existing elk of America and Asia. The following are its dimensions:—

	Ft.	*In.*
Height to the tip of the first dorsal vertebra, which is the highest point of the trunk, ...	6	1
Height to the anterior superior angle of the scapula, .	5	4
Length from the first dorsal vertebra, to the tip of the os coccygis, ...	5	2
Depth of the thorax, from the tip of the process of the eighth dorsal vertebra to the sternum, at the junction of the eighth rib, ...	2	2
Lateral or horizontal diameter of the thorax at the widest part, that is, at the eleventh rib, ...	2	0½
Height to the tip of the right horn, ...	9	7½

CLASS II.—BIRDS.

The fossil remains of birds are very limited. In the strata of the secondary series, all that have yet been found are some scattered bones of a wader, discovered by Mr Mantell in the fresh water formation of Tilgate forest. Besides these, eight or nine others have been enumerated, belonging to the genera; falco, (buzzard) owl, quail, woodcock, sea-lark, (Tringa) curlew, and pelican. In the new red sandstone of the valley of Connecticut, professor Hitchcock has discovered the impressions of the footsteps of birds, which he refers to at least seven different species, all of which appear to have been waders with very long legs, and of various sizes, from that of a snipe to twice the dimensions of an ostrich. In the lacustrine formations of Cournou and Auvergne, some instances have occurred of eggs being preserved.

So imperfect are all the other fragments of birds, that a more minute detail of them would be quite unsatisfactory.

CLASS III.—REPTILES.

In the earlier periods of animal existence, reptiles seem to have been created of dimensions much greater than those which now exist. They were, besides, much more numerous in proportion, than at present.

Several reptiles of the lizard tribe, very much like the large monitors now existing in the torrid zone, are found in the bituminous slates of Thuringia, in the midst of innumerable fishes of genera now unknown. The Alpine limestone of Germany and Lorraine has produced skeletons of a large sea tortoise, whose shells might be from six to eight feet in length. The *Ichthyosaurus* (discovered by Sir E. Home), of the reptile family, has a head like the lizard, armed with conical and pointed teeth, enormous eyes, a spine composed of flattened vertebræ, slender ribs, and four limbs, of which the femora and humeri are short and thick. This extraordinary animal, of which four species have been discovered, and of which the largest is twenty feet long, is found imbedded in the oolitic and lias limestones. The *Plesiosaurus*, pl. 65, fig. 44. discovered by Mr Conybeare, and which belongs to the same formation, is still more gigantic in size. It has similar limbs, but more elongated and flexible. Its shoulder and pelvis are stronger, its vertebræ more assimilated to those of lizards, but distinguished from all oviparous and viviparous quadrupeds by a slender neck, as long as its body, rising from the trunk like the body of a serpent, and terminated by a very small head. Of this hydra-like monster five species are already known. They were discovered in England, and have since been found in France and Germany. Still another very remarkable genus of reptiles, found in the oolite and the higher sands, is called the *Megalosaurus*; for, with the shape of lizards, and particularly of the monitors, of which it has the cutting and indented teeth, it exceeded seventy feet in length. It was discovered in England by Mr Buckland, and has since been found in France and Germany. But the most remarkable animal found in the slaty limestones is the flying lizard,—a reptile with a very short tail, a long body, a muzzle greatly extended, and armed with sharp teeth, supported on high legs, the anterior extremity having one excessively long claw, which is imagined to have given support to a membrane for sustaining it in the air, together with four other toes of ordinary size, terminated by hooked claws. Three species of this extraordinary genus have been found, all of which are very small. The *Mosaurus*, found in the chalk mountain of St Peter, near Maestricht, is upwards of twenty-five feet in length. Its jaws are armed with very strong teeth, and its palate is furnished with teeth also. It has more than 130 vertebræ in its spine, one of which we have represented, pl. 65, fig. 19; and its tail is high and broad, and must have formed a large vertical oar. Scarcely less remarkable are the organic remains found by the celebrated Cuvier in the gypsum quarries about Paris. They belong to several families, some of which resemble the tapiers, others the rhinoceros, others the otter, though nearly as large as the wild boar. Besides the pachydermata, the same quarries afford carnivora, several sorts of birds, crocodiles, and tortoises.

ORDER II.—SAURIA.

The order of Saurian reptiles occupied the most extensive range of organized beings, in those remote ages, during the formation of the secondary series of strata, which may, with propriety, be denominated *the age of Reptiles.* Of these gigantic races, then the dominant class of animals, not a single species now inhabits our earth in a living state. They seem to have been the most formidable inhabitants both of land and water. The living saurians, in comparison of the fossil kinds, are but small animals.

GENUS ICHTHYOSAURUS, (OR FISH LIZARD),

Contains some of the most remarkable of these extinct reptiles. They have received this name from the circumstance of their vertebræ resembling those of fishes. These animals were endowed with extraordinary structure, and combinations of form, which are not now to be met with concentrated in one individual. For example, we find in one species the snout of a porpoise, the teeth of a crocodile, the head of a lizard, the vertebræ of a fish, the sternum or collar-bone of an Ornithorynchus, and the paddle-like fins of a whale, four in number. The tail was long and powerful. There must have existed seven or eight species, all pretty nearly alike. We have represented the common species, *Ichthyosaurus communis*, pl. 65, fig. 49. The generic characters are, head long, wedge-shaped; orbits *very large;* nostrils placed near the anterior angle of the eye; teeth conical, very numerous, sometimes to the extent of 180, ranged in a continuous furrow; jaws much elongated and projecting into beaks, and composed of numerous thin plates; vertebral column consisting of upwards of 100 joints; ribs slender, most of them bifurcated at top; four feet or paddles, shaped like those of whales.

GENUS PLESIOSAURUS.

Head short, somewhat oblong, obtuse; neck extremely long, consisting of about thirty-three vertebræ; body elongated; tail short; nostrils small, placed near the anterior angle of the eye; teeth numerous, and lodge in small alveoli; ribs composed of two parts, the one vertebral and the other ventral, the vertebral column consisting of about ninety joints. See *Plesiosaurus Dolochodeirus*, pl. 65, fig. 44.

Perhaps there has been no animal created of a more extraordinary form than this. In the length of neck it far exceeds even the longest necked birds. It is in this species five times the length of its head; the trunk of the body four times the length of the head; and the tail three times; while the head itself is only a thirtieth part of the whole body. From the whole physiology of the animal, Mr Conybeare says, that it was aquatic is evident from the form of its paddles; that it was marine, is almost equally so, from the remains with which it is universally associated; that it may have occasionally visited the shore, the resemblance of its extremities to those of the turtle, may lead us to conjecture; its motion, however, must have been very awkward on land; its long neck must have impeded its progress through the water, presenting a striking contrast to the organization which so admirably fits the Ichthyosaurus to cut through the waves. May it not, therefore, be concluded, (since, in addition to these circumstances, its respiration must have required frequent access of air,) that it swam upon, or near the surface; arching back its long neck like the swan, and occasionally darting it down at the fish which happened to float within its reach. It may, perhaps, have lurked in shoal water along the coast, concealed among the seaweed, and raising its nostrils to a level with the surface from a considerable depth, may have found a secure retreat from the assaults of dangerous enemies; while the length and flexibility of its neck may have compensated for the want of strength in its jaws, and its incapacity for swift motion through the water, by the suddenness and agility of the attack which they enabled it to make on every animal fitted for its prey.

GENUS MOSASAURUS.

The form of the head and teeth are nearly allied to those of the monitors. The teeth are fixed on the spheroid bone, and situated in the roof of the mouth, acting as barbs to prevent the escape of their prey; the vertebræ, 133 in number, are concave in front, and convex behind; the tail flattened on each side, but high and deep in a vertical position; there are four large paddles, like those of a whale.

The *Mosasaurus* has evidently been entirely an aquatic animal. It has been known by the name of the great animal of Maestricht, as it was found near that city, in the calcareous free-stone, which forms the most recent deposit of the cretaceous formations. Remains of this animal have lately been found by Mr Mantell, in the upper chalk, near Lewes, and by Dr Morton, in the green sand of Virginia. The length of this animal is about twenty-five feet; while none of the living species, to which it is somewhat allied, exceed five inches.

GENUS CROCODILUS.

There have been many species of this genus found in a fossil state, and these are easily recognized. They are imbedded in a great number of strata, both in the middle geological ages, and in the gypsum of Montmartre, near Paris; and also in the limestone at Caen, fig. 26, pl. 65, besides the blue calcareous marl, near Hornfleur, of which we have given a representation at fig. 25. It is unnecessary to enter particularly into the characters of those fossil species; we shall therefore content ourselves with a simple reference to our representation in plate 65. One of the most remarkable of the genus is the Crocodilus Priscus of Sœmmering, pl. 45, fig. 36. This animal was discovered in a limestone of a greyish white, which abounds in ammonites, and also furnishes enormous frize stones. It was in the celebrated quarry of Solenhoffen, in the valley of the Altmuhl, a little below Pappenheim, that this fossil was found.

SUB-GENUS GROSAURUS.

This is another sub-genus of large animals which seems to form an intermediate link between the monitors and the crocodiles. The remarkable animal, of which we have given a representation of its cranium, plate 65, fig. 21, and a single tooth, fig. 22; three vertebræ, fig. 23, and a rib, fig. 24, was found in a district called Meulenhardt, ten feet deep, enveloped in a bed of softish marl.

GENUS PTERODACTYLE.

The Pterodactyle, or flying reptiles, are perhaps the most singular animals which geological discovery has brought to light. So remarkable are the forms, and so incongruous the combinations of structure, that the first discovered animal of this genus was, by some naturalists, considered to be a bird, by another a species of bat, and by a third a flying reptile. This discrepancy of opinion arose from its possessing characters which agreed with these various animals. In the form of its head and length of its neck, it bears some analogy to birds: it has wings allied in structure to those of bats, with a body and tail approximating to those of the ordinary mammalia; and, like that of reptiles, the skull is small. It is provided with a beak, in which are placed sixty acute teeth. In this animal we have the structure of a Saurian reptile, of which it forms an extinct genus; with a conformation which adapts it for aerial excursions. In external form, these animals must have nearly resembled the present vampire bats, so common in South America, but with much longer snouts, not unlike those of crocodiles, and armed with conical teeth. Their eyes were of enormous size, from which we may infer that they were nocturnal animals. Their wings had projecting hooked fingers, like those of bats. These must have proved useful paws for the purpose of prehension, and also for enabling them to creep and climb. It seems probable that these animals possessed the power of swimming, as well as all other reptiles, both extinct and recent.

Eight species of this genus have been ascertained, varying in size from a snipe to that of a cormorant. The smallest known species is the *Pterodactyle brevirostris*, from Solenhofen; and professor Buckland found the *P. macronyx*, in the lias at Lyme Regis, which is about the size of a raven.

GENUS MEGALOSAURUS.

This genus was established by professor Buckland, and is a lizard of great size. It appears to have been an enormous reptile, measuring from forty to fifty feet in length, and in form somewhat between the crocodile and the monitor. It was discovered in the oolite slate of Stonefield, near Oxford; the principal place where these bones are yet found. Mr Mantell has, however, detected some remains of this animal in the Wealden fresh-water formations of Tilgate forest, from which it may be inferred that it lived during the deposition of the entire series of oolitic strata. A jaw, containing teeth and some other bones, was found in the oolite at Besançon.

GENUS IGUANADON.

The teeth of this animal almost entirely agree in construction with those of the existing Iguana; the construction of its feet prove it to have been a terrestrial animal, and, like the recent species, has had a horn of bone upon the nose. This immense animal far outstrips all land species, whether extinct or recent. Its length from the snout to the extremity of the tail is seventy feet; the length of the tail fifty-two and a half feet; and the circumference of the body fourteen and a half feet; whereas, the largest living species of Iguana does not exceed five feet in length. Mr Mantell has calculated that the thigh bone of the Iguanadon is twenty-five times larger than that of the living species, far exceeding in bulk that of the largest elephant; the circumference in its smallest part being twenty-two inches, its entire length must have been from four to five feet. From the construction of its teeth, which are much like those of the rhinoceros, it appears to have been a strictly herbivorous animal. This enormous creature was found by Mr Mantell in the fresh-water formation of Tilgate forest.

ORDER III.—CHELONIA.

GENUS TESTUDO.

The animals of this order are not met with in strata older than the carboniferous series. Cuvier mentions the shell of a sea-turtle, which was found in the Muschelkalk at Luneville, which measured eight feet in length. In the slate of the lower cretaceous formation at Glaris, another species was found; and a third in the upper cretaceous free-stone at Maestricht. Pl. 65, fig. 8, is a representation of a fossil tortoise, found in the quarries of Melsbroek, near Brussels. This was at first mistaken by Cuvier for a marine species; but more attentive examination convinced him that it was a land animal.

CLASS IV.—FISHES.

For the characters of the orders, see Ichthyology.

The history of fossil fishes is more imperfect than any other department, owing to so little being known respecting the living species; but the cloud which has so long hidden it is likely soon to be dispelled by the able and important investigations of professor Agassiz, who has already ascertained and described two hundred genera, containing upwards of eight hundred and fifty species of fossil fishes. These discoveries are of much importance to the geologist, and will enable him to follow this high class of vertebral animals, through the whole series of geological formations.

The most extensive deposits of fossil fishes in Europe, are the coal formations of Saarbruck, in Lorraine; the bituminous slate of Mansfield, in Thuringia; the calcareous lithographic slate of Solenhafen; the compact blue slate of Garis, the limestone of Monte Bolea, near Verona; the marlstone of Oeningen, in Switzerland; and of Aix, in Provence.

Of the existing genera of fishes, no species has been found in a fossil condition in any stratum older than the chalk formation. In the inferior chalk, there has been met with a species belonging to the living genus, Fistularia; in the true chalk, five; and in the tertiary strata of M. Bolea, species belonging to thirty-nine living genera have been ascertained; and thirty-eight which are extinct.

Agassiz has founded his classification of recent fishes upon the characters of their scales, which is peculiarly applicable to fossil fishes. So certain is the criterion, that from a single scale he will often be able to ascertain, with certainty, the genus, and also the species to which it belonged. This mode of discrimination is peculiarly useful in the study of fossil fishes, as in them the enamelled condition of the scales rendered them more durable than even their bones; and it not unfrequently happens, that all the scales of a fish are found in entire preservation, while their bony skeleton has entirely disappeared; this arises from the enamel of the scales being less soluble than the calcareous substance of the bone. M. Agassiz divides fishes into the following new Orders:

ORDER I.—PLACOIDIANS.

Skin irregularly covered with plates of enamel, frequently of considerable dimensions, and sometimes reduced to small points, like shagreen on the skins of many sharks, and the tooth-like tubercles on the skins of rays. This order embraces the whole cartilaginous fishes of Cuvier, with the exception of the sturgeon. See an example of the scales of this Order, pl. 65, figs. 89, 90.

ORDER II.—GANOIDIANS.

With angular scales, composed of horny or bony plates, covered with a thick plate of enamel. In this order he has included the sturgeon and bony pike. There are upwards of sixty genera, of which fifty are fossil. See example of scales, pl. 65, figs. 87, 88.

ORDER III.—CTENOIDIANS.

Scales jagged or pectinated like the teeth of a comb, or on their posterior margin. They are formed of laminæ of horn or bone, but are destitute of enamel. The scales of the perch are so constructed. See example of scales, pl. 65, figs. 91, 92.

ORDER IV.—CYCLODIANS.

Scales smooth, and simple at their margin, and often ornamented with various figures on the upper surface. These scales are composed of laminæ of horn or bone, but are destitute of enamel. The scales of the salmon and herring illustrate this order. See pl. 65, figs. 93, 94.

Each of these orders contains both cartilaginous and bony fishes; the representations of each prevailed in different proportions during different epochs; only the two first existed before the commencement of the cretaceous formations; the third and fourth orders, which contain three-fourths of the eight thousand known species of living fishes, appear, for the first time, in the cretaceous strata, when all the preceding fossil genera of the two first orders had become extinct.

The general result of the discovery and inquiry into these important fossil remains, is, that those which are imbedded in strata, of the greatest antiquity, differ more widely from existing genera and species than those of the most recent tertiary deposits, and afford a further confirmation, that all the great changes, in the character of fossil fishes, have taken place simultaneously with the most important alterations in the other classes of fossil animals, and in fossil vegetables, as well as in the mineral condition of the strata. M. Agassiz has found that fossil fishes, in the same formation, present greater variations of species, at distant localities, than we find in the species of shell and zoophytes, in corresponding parts of the same formation; and that this circumstance is readily explained by the greater locomotive powers of this higher class of animals. And an important result has attended his discoveries, namely, that the age and place of several formations, hitherto undetermined, have been rendered clear, by a knowledge of the fishes imbedded in them.

We can only allude to a few of this numerous Class, and point out a few which are imbedded in different formations.

Sauroid, or Lizard Fishes, of the family Ganoid.—These must have been very voracious animals, and in the character of their bones agreeing both with fishes and reptiles. Seventeen genera of this family have been ascertained by Agassiz, only two of which are to be found in a recent state; and these are the *Lepisoteus*, or bony pike of Lacepede; and *Polypterus*, the former inhabiting the Nile, and the latter the rivers of North America. The teeth of fishes of this family, of a conical form, and of a size larger than those of any crocodile, have been found in the coal formations in the neighbourhood of Edinburgh; these are considered to be of a new genus, which Agassiz calls Megalichthys. The magnesian limestone furnishes us with examples of the smaller sauroid fishes, and very large bones are found in the lias at Whitby and Lyme Regis; and the genera abound throughout the whole oolite formation, and almost disappear in the cretaceous formations. They have not been found in the tertiary formations.

Fishes of the genus *Amblypterus*, a genus limited to the early periods of geological formations, and is found in the carboniferous strata at Staarbruk, in Lorraine, and also in Brazil, pl. 65. fig 86. These animals seem to have been destined to feed on soft and decayed seaweed, and tender animal substances; as the teeth are numerous, very small, and set together in fasciculi, like the hairs of a brush.

SHARKS seem more universally diffused in a fossil state than any other family. Insulated specimens of their teeth have been found in every country. Agassiz has separated this great family into three sub-families; the oldest of which he calls *Cestracionts*, which occupy every series of strata, from the transition to the beginning of the tertiary. There is only one living representative of this family in the *Cestracion Philippi* of Port Jackson. The second sub-family commences with the Muschelkalk, and probably with the coal formation, spreads over the oolite series, and ends at the beginning of the chalk. The *Squaloids*, or third sub-family, has its origin in the cretaceous formation, and extends through the tertiary strata. Fig. 16, pl. 65, is a tooth of an extinct species of shark, measuring four inches and a half in length, and three and a half in width at the base, which Lacepede considered belonged to an enormous animal, not less than seventy feet in length. Fig. 18 represents a tooth of a dog-fish, as given by Silla. The second division of this family is the Hybodonts, fossils of which appear with the coal formation, and prevail through the secondary strata under the chalk; the teeth of this sub-family present characters intermediate between cestracion and squaloids. Fig. 14 is another fossil tooth, resembling those of the *Squalus Zygena* in form. Fig. 17 is a longitudinally striated tooth, which was found in a moss with others, evidently belonging to the same fish, at the Old Passage, Gloucestershire, by Mr Johnson of Bristol, which last may be referred to a fish of this family.

The fishes of the Muschelkalk consist of species which are either peculiar to it, or are similar to those imbedded in the oolite and lias. During the middle geological ages, fish of the genus *Microdon*, and of the family Pycnodonts, or thick-toothed fishes, of which there are five genera. Another important and very abundant family, was the *Lepidoids*, which are remarkable for the great thickness and beautiful enamel of their scales. To this family belongs the genus *Dapedium*, of which we have given an example in the species *Politum*, from Lyme Regis, pl. 65, fig. 9. The scales of this genus, figs. 87 and 88, are generally provided on the upper margin with a large hooked process, not unlike that of a tile, which fits into a small pit, on the lower margin of the scales placed next above it. M. Agassiz has determined 200 fossil species with this sort of armour. No living example exists of all the genera found in the oolite series.

In the CHALK FORMATIONS, there is a remarkable change in the character of its fishes. This commences with the cretaceous series. All the genera which prevailed in the older series suddenly disappear, and are replaced by those of the new *Ctenoidean* and *Cycloidean* orders. Nearly two-thirds of the latter are now extinct; but these are more nearly allied to fishes of the tertiary series, than to those which had preceded the formation of the chalk. When we compare the fishes of the chalk with those of the elder tertiary series of Monte Bolea, we do not find a single species, and only a few belonging to the genera, that are common to both.

No sooner do our investigations reach the TERTIARY FORMATIONS, than a still more decided change presents itself. These belonging to the Eocene period; more than a half of which are now of extinct genera, and not one of which can be found an existing species. The forms that now remain are only to be met with in tropical regions. Agassiz has re-arranged these fishes, and formed from them 77 genera, 38 of them extinct, and of which there are 127 extinct species. Of living genera there are 39, to which belong 81 fossil species, found at Monte Bolea. Belonging to the extinct genera, there are 46 species found at Monte Bolea. The fishes of the London clay, Sheppy, as well as Monte Bolea and Mont Martre, belong to the first period of the tertiary formations. Those fishes belonging to Oeningen, which all naturalists have considered connected with a very recent lacustrine deposit, have been referred by Agassiz to the second period of the tertiary series, and of a date corresponding with that of the Molasse of Switzerland. All of these belong to living genera, and only one species is of an extra European genus.

The rays which belong to the fourth family of the order of Placoidians, have not been found in strata older than the lias and the Jura limestone, and abound in the tertiary formation.

We have seen from the above rapid review of fossil fishes, that with the dawn of sub-marine existence, commenced, and has been continued to the present time, the same bony and cartilaginous forms, of this class. Their teeth, scales, and bones, all agree; and the extinct forms, which have been discovered, only fill up so many links which were awanting to complete this part of the elegant and beautifully constructed chain of being. Every period has had its animals performing, as at the present hour, those duties which are assigned to them in the place of creation.

CLASS V.—FOSSIL MOLLUSCA.

As we have before observed, the study of fossil shells forms the most important branch of geological inquiry; because they are often met with in so perfect a condition, and having all their parts so distinctly developed, they serve as, perhaps, the most certain criteria by which to judge of the different strata in which they are found imbedded. The perfection of these shells, in some degree, compensates for the total want of their animal inhabitants in a fossil condition; but many of these bear such a close analogy to those now living, that we may infer their inhabitants were nearly allied to existing species, and that their formation must have been similar. For a classification of these, and their generic characters, we refer to the article Conchology, and for the characters of the animals, to Mollusca,—a term which has, by recent naturalists, been rendered in English Mollusks.

The whole figures of the class Mollusca refer to plate LXVI.

ORDER II.—CEPHALOPODA.

DIVISION III.—CEPHALOPODA POLYTHALAMA.

FAMILY I.—AMMONACEA.

Septa sinuous, lobed, and cut at the margins, meeting together upon the inner wall of the shell, and articulated by jagged sutures.

BACULITES.—Shell straight, cylindrical, sometimes a little compressed, slightly conical; the walls articulated by sinuous sutures; septa transverse, close, imperforate, lobed and lacineate at the margins.

Baculites Faujassi. Pl. 66. f. 1. Erect, cylindrical, opposite sides smooth and depressed; sutures with lobed dentations. Found in Mount St Peter, at Mæstricht.

HAMITES.—Fusiform; hooked or bent into two parallel limbs, chambered; septa undulated at their margins, with a siphuncle at their outer edge.

Hamites compressus. Pl. 66. f. 9. Depressed, curved at right angles; undulations very regular, sharp, slightly waved, bending towards the curve, and most prominent at the back.

TURRILITES.—Spiral turreted, volutions contiguous, and all conspicuous; partitions articulated with sinuous sutures; septa transverse, lobed, and laciniated at the margin; siphuncle placed near the upper part of the volutions; aperture nearly round.

Turrilites tuberculata. Pl. 66. f. 2. Volutions beset in the middle with one row of large obtusely conical tubercles, and three rows of smaller ones at the base of each volution. Found in the marl stratum at Middlesham, parish of Ringmer, Sussex.

AMMONOCERAS.—Horn-shaped, arcuate, subsemicircular; the walls articulated with sinuous, laciniate, branched sutures; septa transverse, sinuous, imperforate; their margins lobed, laciniate; a marginal tube or syphon, not perforating the septa.

Ammonoceras glossoideus. Pl. 66. f. 3. Large, thick cylindrical, arcuated, lateral, depressed; inside flatly concave; apex compressed, tongue-shaped; nineteen inches two lines long. Found in the East Indies, and in Mount St Catharine, near Rouen.

ORBULITES.—Subdisciform, spiral, with the volutions contiguous, the last enveloping the rest; the inner walls articulated by sinuous sutures; septa transverse, lobed at their circumference, and perforated by a marginal tube.

Orbulites striatus. Pl. 66. f. 4. Umbilicated; volutions hidden; transversely and minutely striated and ribbed; back acute. One and a half inch long.

AMMONITES.—Discoid, spiral; volutions contiguous, and wholly visible; inner partitions articulated by sinuous sutures; septa transverse, lobed at the circumference, and imperforated at the disc; but perforated by a marginal siphuncle near the margin.

Ammonites Planatulus. Pl. 66. f. 5. Smooth, destitute of striæ or ribs.

SCAPHITES.—Concamerated, commencing with a depressed volution, with its last turn enlarged and elongated, and afterwards inflected.

Scaphites equalis. Pl. 66. f. 31. Involute, umbilicated, inner volutions concealed; surface with produced radii extending all round the volution; outer part rounded with about two projecting striæ between, and equal to each of the rays; outer volution ventricose, with greatly enlarged radii, and abruptly terminating without reaching the edge. The external surface has a nacred lustre. Found at Yeovil, in the green sand formation.

ELLIPSOLITHES.—Univalve, elliptical, involute chambered, with all the volutions apparent; aperture lunulate on account of receiving in its inner part the return of the volution.

Ellipsolithes funitus. Pl. 66. f. 32. With numerous transverse, simple ridges, and intervening grooves somewhat wider than the breadth of the ridges; a kind of constriction appears at intervals, and distinguished by a small protuberance on the inner part of the rising immediately beyond it.

FAMILY II.—NAUTILACEA.

Shell disciform, with a central spire, and short cells, which do not extend from the centre to the circumference.

SECTION I.—WITH CELLS.

NAUTILUS.—See article Conchology for the generic character.

Nautilus striatus. Pl. 66. f. 30. Slightly depressed; umbilicus large, exposing a small portion of the inner volutions; strongly striated concentrically; aperture orbicular, and nearly half the diameter of the shell; volutions gibbous, few, and increase rapidly. Found in the blue lias at Lyme Regis, Dorsetshire.

NUMMULITES.—Lentiform, attenuated towards the margins; spire internal, disciform, multilocular, covered over by several tables; the outer wall of the volutions complicated, extending and uniting on each side at the centre of the shell; cells very numerous, small, alternate, and formed by transverse imperforate septa.

Nummulites complanata. Pl. 66. f. 115. Smooth, round, very broad, and flat, with an undulating margin. This species is easily distinguished by its extreme thinness, and all the volutions and every septum being perceptible on the surface. Fig. 7. is a section of an unknown species. Found in the neighbourhood of Saissons, in France.

VORTICIALIS.—Discoid, spiral, multilocular with contiguous volutions, which are not visible externally; provided with imperforate transverse septa, which do not extend from the centre to the circumference; aperture marginal.

Vorticialis strigilata. Pl. 66. fig. 10. Somewhat depressed; spirally ribbed, and spirally striated.

POLYSTOMELLA.—Discoid, multilocular, with invisible volutions, and numerous transverse ribs; aperture formed by variously disposed holes.

Polystomella crispa. Pl. 66. f. 11. Slightly wrinkled and ribbed transversely. Found in the chalk formations.

SIDEROLITES.—Discoid, multilocular; volutions contiguous, but not visible externally; disc conoid on both sides, and studded with tubercular dots; the circumference margined with unequal radiating lobes; septa transverse, imperforate; aperture distinct, somewhat lateral.

Siderolites calcitrapoides. Pl. 66. f. 12. With four lobes, and punctuated throughout. Found in the mountain of St Peter, at Mæstricht.

DISCORBIS.—Discoid, spiral, multilocular, with simple partitions; the volutions wholly visible, exposed and contiguous; with transverse, numerous, and imperforate septa.

Discorbis vesiculuris. Pl. 66, f. 13. Volutions nodulous, subvesicular; the internal ones hidden by the nodules. Found at Grignon.

SECTION II.—WITHOUT CELLS.

BELLEROPHON.—Involute, and almost spherical, the last volution enveloping the others; aperture arched, and terminated by the extremities of the columella or axis, and provided with a sinus in its outer edge.

Bellerophon cornu-Arietis. Pl. 66. f. 28. Very thick, somewhat compressed; internal volutions few, suddenly enlarging and carinated near the aperture, which is considerably expanded; sinus large and angular. Found in limestone at Kendal, Westmoreland.

FAMILY III.—RADIOLACEA.

Discoid with a central spire, and elongated radiating cells, extending from the centre to the circumference.

PLACENTULA.—Orbicular, convex above and below, multilocular; aperture oblong, narrow, disposed like a radius in the lower disc, or sometimes in both upper and under.

Placentula astricans. Pl. 66. f. 14. Volutions convex, partitions radiating from the centre; back undulated, in consequence of a hollow at each partition.

LENTICULINA.—Sublenticular, spiral, multilocular; outer margins of the volutions complicated, and extending above and below the centre; septa imperforate, curved, and lengthened on both sides in the form of rays; aperture narrow, projecting over the last volution.

Lenticulina rotulata. Pl. 66. f. 15. Orbicular; margins acute; disc globular. Found at Mendon.

ROTULITES.—Orbicular, multilocular, spiral convex, or conical above; flat, radiated, and tubercular beneath; aperture marginal and trigonal.

Rotulites trachidiformis. Pl. 66. f. 16. Conoid; volutions carinated; lower one granulated. Found at Grignon.

FAMILY IV.—SPHERULACEA.

Shell globular, spheroidal, or oval; with the volutions mutually enveloping, or the cells contiguous, and forming a tunic.

MELONIA.—Subspherical, multilocular; spire central; volutions contiguous, convolute, tuniciform; cells numerous, narrow; septa imperforate.

Melonia Sphæroidea. Pl. 66. f. 17. Entirely globular, and divided by depressed ribs.

GYROGONA.—Spherical, concave within, composed of linear, curved canaliculate pieces; the external surface with carinated, parallel, partly transverse ribs, and bound at the last volution; aperture round, terminated by a small round shell.

Gyrogona costata.—Pl. 66. f. 6. Upper side with concentric, divergent ribs, and an umbilicated centre

QUINQUELOCULINA.—With five cells surrounding the axis, and alternately embracing each other; aperture extremely small, orbicular, and situate at the base of the larger compartment.

Quinqueloculina striatula. Pl. 66. f. 110. With five compartments, the two longer ones somewhat embracing the others; all longitudinally striate. Found in the Calcaire Grossier, at Paris. It is not larger than the head of a small pin.

TRILOCULINA.—With three cells surrounding the axis, alternately clasping each other; aperture semilunar, or sub-discoidal.

Triloculina communis. Pl. 66. f. 18. Three-lobed, the superior one striate at top; shell smooth and glossy. Found in the Calcaire Grossier at Paris. Very minute.

BILOCULINA.—Two-chambered, the inferior one losing itself; the superior aperture circular, with a bifurcate, projecting syphon in its centre.

Biloculina opposita. Pl. 66. f. 114. Shell with two opposed compartments; the superior one embracing the smaller. Found in the Calcaire Grossier at Paris. Very minute.

FAMILY V.—CRISTACEA.

Shell discoidal, with an eccentric spire.

ORBICULINA.—Subdiscoid, multilocular, with compound contiguous volutions; spire eccentric; cells short, very numerous; septa imperforate.

Orbiculina uncinata. Pl. 65. f. 19. Spirally striated, and the volutions separated by a deep sinus.

CRISTELLARIA.—Semidiscoidal, multilocular; cells contiguous, simple, progressively enlarging; spire eccentric, sublateral; septa imperforate.

Cristellaria Squammula. F. 20. Shell externally covered with minute scale-like lines.

RENULINA.—Kidney-shaped, flat, sulcated, and multilocular; volutions linear, contiguous, the second curved, the last lengthened; the axis marginal.

Renulina opercularia. F. 21. Semilunar, depressed, with arcuated concentric ridges. Found at Griguon.

FAMILY VI.—LITUOLACEA.

Shell partly spiral; the last volution continued in a straight line.

LITUOLA.—Disciform, partly spiral and multilocular; volutions contiguous, the last terminating in a straight line; cells irregular; septa transverse and simple, the last perforated by three or six holes.

Lituola diformis. F. 22. Curved, semispiral, extremities obtuse; the base close. Found at Meudon.

SPIROLINA.—Multilocular, partly spiral, and discoid; volutions contiguous, the last one terminating in a straight line; septa straight, perforated by a tube.

Spirolina cylindrica. F. 23. Shell straight, apex partly incurved; aperture orbicular. Found at Grignon.

FAMILY VII.—ORTHOCERATA.

Shell straight, or nearly so, and not spiral.

CONILITES.—Conical, straight, slightly inflected, having a thin outer crust distinct from the nucleus which it contains; nucleus somewhat separable, multilocular, and divided by transverse septa.

Conilites pyramidata. F. 24. Pyramidal, with the concave bands contracted. Found at Vanches Noires.

HIPPURITES.—Cylindrico-conical, straight, or a little arcuate, multilocular, with transverse septa; an internal lateral channel formed by two parallel, longitudinal, obtuse, and convergent ridges, the last cell closed by an operculum.

Hippurites infundibiliformis. F. 25. Funnel-shaped, four-chambered; lid with two wedge-shaped slits. Found at Grignon.

ORTHOCERA.—Elongated, straight, or a little arcuated, and subconic; ribbed, with longitudinal, external grooves; chambers formed by transverse septa, perforated by a tube, which is either central or marginal.

Orthocera annulata. F. 29. Slightly tapering, and somewhat compressed, with strong, somewhat oblique, annulations, at a distance of about one-fourth the diameter from each other; siphuncle placed near the margin. Found in a limestone quarry at Colesbrookdale, Shropshire.

BELEMNITES.—Straight, conical, elongated, capable of being separated into two parts, the outer one being a solid sheath, produced above, and excavated with a conical cell beneath; the inner nucleus conical, and multilocular, divided by numerous transverse septa, perforated by a central tube.

Belemnites abbreviatus. F. 26. Tapering, sheath smooth externally, and striated internally.

AMPLEXUS.—Almost cylindrical, divided into chambers by numerous transverse septa; septa embracing each other with their reflected margins.

Amplexus coralloides. F. 34. Tube irregularly curved, and striate longitudinally; margins of the septa regularly plaited, and deeply reflexed. Diameter an inch and a half. Found on the Black rock at Limerick, Ireland.

CONULARIA.—Conical, hollow, and divided by numerous imperforate septa.

Conularia quadrisulcata. F. 69. With four sides, somewhat lozenge in shape, straight, transversely sulcated, and longitudinally striate; sulcated at the four angles. Found in the transition limestone at Bristol.

Calcarina rarispina. F. 109. Doubly conical; top with a central bottom, from which radiate six lines dividing it into compartments, four of which are provided with central, marginal spines; aperture consisting of a slit in one of the lines. Extremely minute. Found in the Paris basin.

Clavulina corrugata. F. 112. Shell erect, tapering; provided with numerous compartments, transversely divided; the aperture circular, and placed in the superior one; inferior compartments complicated, separated into lozenge-shaped divisions. Found in the Paris basin.

ORDER III.—TRACHELIPODA.

SECTION I.—ZOOPHAGOUS TRACHELIPODA.

FAMILY I.—INVOLUTE.

Conus duoius. F. 73. Shell smooth, spire about a third of the length of the shell, and with a slight indication of tubercles. Found in clay at Highgate hill, London.

Oliva Salisburniana. F. 72. Subfusiform, short, ventricose, smooth; mouth oblong, both lips tumid above. Found in Hampshire.

Ancillaria aveniformis. F. 66. Elongated, oblong-ovate, smooth and shining, spire long, acute; columella with two plaits; inner lip extension short; aperture somewhat more than half the length of the shell; inner lip extended over about a third of the exposed part of each volution. Found at Barton.

Terebellum fusiforme. F. 71. Cylindrical, subfusiform, spire visible and obtuse; aperture with an adpressed straight canal, proceeding from its upper angle to the apex of the spire. Found near Hordwell.

SERAPHS.—Convoluted, elongated; spire internal, concealed; base truncated; aperture longitudinal, extending to the apex of the spire; lip acute; columella smooth. Distinguished from the terebellum, by the volutions of the spiro being concealed.

Seraphs convolvulus. F. 37. Subcylindrical, slightly tapering towards the base, which is truncated; apex obtuse; external surface smooth; shell thin and fragil. Found in Hampshire.

Cypræa oviformis. F. 45. Oviform, tumid, smooth, and slightly marginated; aperture somewhat expanding towards its base, and obscurely toothed on its left side; right lip tumid and involute, and tapering to a short semibeak. Found at Highgate hill.

Marginella quadruplicata. F. 75. Very minute; oval, smooth, columella with four plaits, aperture linear, outer lip toothed and thickened. Found at St Hospice, Italy.

Voluta spinosa. F. 57. Turbinated, base transversely striate; body with longitudinal separated ribs; body wholly crowned with somewhat acute spines; spire short, acute, and spinous; columella from four to six plaited. Found at Grignon.

Voluta rarispina. F. 87. Obovate, base transversely sulcated; the body volution with remote, somewhat obtuse spines; spire short and mucronated; outer lip thick, internally striated; columella callous, with three depressed plaits.

Mitra plicatula. F. 93. Longitudinally ribbed; outer lip about half the length of the shell; columella with five plaits.

Mitra Dufresnei. F. 101. Spire short; body longitudinally substriate; with remote, transverse, strong striæ; piliar lip reflected on the columells, which is three plicated.

Columbella punctata. F. 76. Ovate with strong longitudinal and transverse striæ, which gives the shell the appearance of being deeply punctured; columella two plaited; outer lip slightly denticulated, and the aperture somewhat compressed. Found at St Hospice, Italy.

Eburna glabrata. F. 80.

Buccinum reticosum. F. 56. Oblong-ovate, acute, reticulated; with six volutions, the upper and lower parts rounded, and the sides somewhat flattened; outer lip denticulated within; the transverse striæ are in pairs; the aperture ovate, pointed above, and the lower end furnished with a recurved sinus. Found at Holywell.

Buccinum prismaticum. F. 104. With close, somewhat oblique longitudinal ribs, and transversely waved; striate; volutions considerably inflated, and deeply divided by the suture.

Buccinum semistriatum. F. 94. Spirally striate; shell consisting of six slightly divided volutions occupying half the shell.

Cassis bicatinatus. F. 61. Ovate, ventricose, with numerous transverse ribs, decussated by indistinct longitudinal costæ, towards the upper part of each volution, giving a chainlike appearance; aperture ovate; inner lip much reflected on the body, through which the ribs are visible; outer lip slightly tuberculated. Found in the crag at Bawdsey, Suffolk.

Cassidaria carinata. F. 85. Ovate, with transverse, thin, slightly undulating striæ; girdled with five subcarinated waved ribs, tuberculated on their upper edge; volutions of the spire flattened above; beak long, and slightly turned upwards. Found at Grignon.

Cassidaria echinoptera. F. 96. Ovate-globose, ventricose, with four broad, elevated, tuberculated, bands, occupying the upper portion of the shell; volutions of the spire angulated, with sharp tubercles on their upper edges.

Strombus lævis. F. 81. Shell smooth, shining; spire short, consisting of four volutions.

Rostellaria rimosa. F. 54. Fusiform, volutions slightly convex, longitudinally ribbed, and transversely striate; lip reflected, with a sinus at the inferior edge, below the expansion of the margin; with a canal at the superior edge, extending nearly the whole length of the spire; beak straight. Found in clay at Barton Cliff.

Murex striatus. F. 116. Ventricose; aperture wide; spire short, consisting of five volutions; the whole shell covered by numerous, sharp, wide set ribs, the intermediate hollows being striate, and intersected by longitudinal striæ; beak nearly straight. Found in the crag pits of Essex and Suffolk.

Murex centrarius. F. 47. Shell strong, reversed; spire with five volutions, separated by an undulating suture; aperture ovate-oblong; body and spire, with numerous distant, smooth transverse ribs; beak short.

Ranella lævigata. Ovate, ventricose, smooth, beak twisted short; lip crenulated within. Found at Piedmont.

Fusus longævus. F. 52. Body ventricose, surmounted by a row of large knobs; spire turreted, the volutions flattened at top, and slightly undulated at their edges; aperture ovate; beak as long as the spire, slightly bent near the base. This is a large shell, measuring sometimes 8½ inches. Found at Barton and Hordwell cliffs, Hampshire.

Fusus crispus. F. 102. With strong longitudinal ribs covering the body and spire; and transverse small thickly set ones; and with transverse intermediate striæ; spire with seven volutions; beak long, tapering, straight, and striated.

Fasciolaria turbinelloides. F. 99. Spire as long as the body, consisting of eight turreted volutions, separated by a strong suture, with large, slightly raised knobs, a row of which also surmounts the body; the whole shell covered with double, distinct striæ, somewhat undulating, and a few remote, waved longitudinal striæ.

Pleurotoma clavicularis. F. 84. Spire a third the length of the shell, consisting of nine smooth, slightly divided volutions, each with four strong spiral striæ at top, as well as on the body pillar; lip with a reflected columella, above which are numerous strong transverse striæ.

Pleurotoma denticula. F. 107. Spire very long, consisting of eight turreted volutions, each with a nodulous band at upper edge; body very small, and beak short; the whole shell covered with strong spiral striæ.

Pleurotoma tuberculosa. F. 86. Turreted, body very small, spire very large, consisting of ten volutions strongly tuberculated at top, and longitudinally wrinkled; the body surmounted by a band of four rows of tubercles, and a smooth band at its base; beak thick, very short, and longitudinally undulated.

Pleurotoma rotata. F. 92. Turreted, spire very large, of seven volutions, a greatly produced carination in the centre, with a row of large tubercles, which also surmounts the body, which is small; the whole shell covered with numerous spiral striæ, and three thread-like lines run spirally from the centre of the body to the apex; beak of moderate length.

Pleurotoma Vulpecula. F. 103. Turreted, spiral same length of body; longitudinally ribbed, and transversely striate; canal short, straight.

Nerinæa.—Turreted, elongated; canaliculated at the base; aperture narrow, oblique, and sub-quadrangular; columella large, perforated the whole length of the shell; thick and strong, with irregular projecting folds extend from the base to the apex over all the volutions; one and sometimes two plaits upon the right side, which correspond to the intervals of the plaits of the columella.

Nerinæa Mosæ. F. 118. Turreted, conical, irregularly subplaited; volutions subnodulous at their base, in the middle of the columella; columella three-plaited; right lip with two plaits.

Cerithium geminatum. F. 58. Conical, elongated, with twelve smooth volutions, each surrounded by seven or eight longitudinally disposed pairs of acute tubercles, and two obsolete transverse carinæ; lip even. Found at Barton Cliff.

Potomides.—Shell univalve turreted; aperture almost semicircular, but destitute of a canal in the upper angle; base contracted into a short, slightly truncated beak; outer lip dilated, with a corneous operculum.

Potomides concavus. F. 38. Subulately conical, slightly striated transversely; volutions somewhat concave towards their upper sides, and provided with obscure, arched ribs, slightly raised above the middle, and extending nearly to the centre of the volutions; base convex, provided with one or two granulated carinæ; outer lip slightly grooved in its upper angle; columella smooth; aperture nearly circular. Found at Barton Cliff and Headon hill, Isle of Wight.

Turritella imbricatoria. F. 88. Turreted with sixteen, flat, transversely sulcated volutions, well defined by the suture; at the base of each volution there is a smooth, spiral belt; base of body smooth; aperture nearly circular, columella slightly reflected.

Turritella conoidea. F. 50. Base of each volution angular, and slightly projecting, with equidistant spiral striæ, seven or more with intermediate smaller ones, acutely crenulated.

Turritella proto. F. 90. With sixteen nearly flat volutions, each furnished with six smooth spiral ribs, the interstices smooth; base of body smooth, columella but slightly reflected above, thicker beneath, with a slight subumbilicus; aperture somewhat ovate.

Phasianella angulosa. F. 65. Conical, smooth, with the volutions subcarinated towards their base; aperture nearly circular. Found at Shalcombe.

Turbo muricatus. F. 67. Short, conical, with numerous muricated ridges, which are equal to the concave spaces; outer lip plaited; columella indented at the base. Found in the coral rag at Steeple Ashton.

Rissoa.—Shell conical; spire shorter than the body; aperture subovate; inner lip reflected on the columella; outer lip thickened.

Rissoa lævis. F. 42 and 43. Smooth, subcylindrical, with six slightly divided volutions; apex obtuse; aperture semi-ovate.

Pyramis.—Subturreted and subconical; aperture entire, and usually distinct from the body.

Pyramis turgidus. F. 77. Turreted, with five much inflated volutions, separated by a deep suture, with strong longitudinal flat ribs, and very fine regular transverse striæ; apex acute. Found at St Hospice, near Nice, Italy.

Trochus Benettiæ. F. 55. Depressed, conical; obliquely wrinkled; base expanded, with a broad-waved margin; volutions externally irregular; base provided with a plicated partly covered umbilicus; aperture compressed.

Trochus magus. F. 97. Conoidal, thick, transversely and longitudinally striated; upper margin of the volutions crowned with tubercles; convex beneath, with strong circular striæ; base deeply umbilicated.

Solarium canaliculatum. F. 82. Convexly orbicular; above it is furnished with waved transversely granulated figures; umbilicus crenulated, and slightly canaliculated.

Solarium variegatum. F. 105. Orbicularly convex; transversely sulcated, and longitudinally striated; with a patulous, crenulated umbilicus.

Euomphilus.—Shell involute compressed; spire depressed on the upper part; concave, or largely umbilicated beneath; aperture nearly angular.

Euomphilus pentangulatus. F. 33. With six volutions, a prominent central ridge on the upper side, and the under side obtusely angulated; striæ irregular and oblique; volutions almost wholly exposed; aperture pentangular. From the black limestone, near Dublin.

Scalaria similis. F. 119. Volutions contiguous; spire with eight volutions, each with distant, elevated, longitudinal oblique ribs, and strong spiral striæ; aperture nearly round. Found at Bramerton, near Norwich.

Cirrus.—Spiral, conical, and destitute of a columella; funnel-shaped beneath; volutions united.

Cirrus acutus. F. 36 Conical, sharp, each volution furnished with an obscure carina near its upper part; aperture round. Found in Derbyshire.

Tornatella fasciata. F. 95. Covered with fine transverse or spiral striæ; apex acute; aperture compressed; columella with one plait.

Acteon—Shell elongated, and somewhat lengthened; aperture entire, oblong, generally about two-thirds the length of the shell; acutely angular above, and rounded underneath; outer lip sharp-edged; columella provided with a spiral, strong plait at its base; operculum oblong and corneous.

Acteon Noæ. F. 39. Shell very thin, oval, with transverse, equidistant, and somewhat wide striæ; and obsoletely decussated; the columella with one plait; outer lip slightly sulcated interiorly. Found in the crag at Walton, Essex.

Natica depressa. Nearly globular, and subumbilicated at the base, with six volutions flattened above; columella depressed beneath; mouth angular at the upper parts. Found at Woodbridge, Suffolk.

Natica epiglottina. F. 100. Semi-globose; smooth; spire very short; mouth large, expanding; umbilicus compressed; semicylindrical, and half hid by the thickness on the pillar lip; above epiglottiform. Found at Montmartre.

Pleurotomaria.—Shell turbinated, trochiform, and discoidal; aperture entire, oblique, rounded, or angular, with a larger or smaller cleft, but deep on the edge of the outer lip.

Pleurotomaria ornata. F. 120. Shell orbicular, discoidal; both sides somewhat convex, base perforated; with longitudinal, regular, slightly undulated striæ; umbilicus narrow, with a spiral rounded rib from the centre of the outer lip to the apex. Found at Caen and Bayeux.

Nerita tricarinata. F. 83. With three strong keel-like transverse ribs on the body, and deeply striate spirally; outer lip with strong undulations.

Ampullaria acuta. F. 70. Ventricose, longer than wide, smooth; spire small, acute; umbilicus small, half closed, sometimes entirely so; aperture ovate, elongated, twice as long as wide. Found at Christchurch.

Paludina concinnata. F. 44. Somewhat conical, with five slightly convex volutions; lower part a little angular; surface smooth. Found at Barton Cliff.

Melania striata. F. 49. Body and spire about equal, tapering, with from eight to ten volutions, spirally ribbed throughout: volutions well divided by the suture. A large shell, sometimes exceeding eight inches. Found in the coral-rag stratum, Wiltshire.

Lymnæa minima. F. 63. Elongated, with somewhat convex smooth volutions; aperture ovate, not half the length of the shell; body not ventricose. Found in limestone, Isle of Wight.

Planorbis cylindricus. F. 60. Cylindrical, with three or four adpressed volutions concentrically striated on the left side; aperture transverse, oblong, quadrangular.

Auricula turgida. F. 62. Ovate, acute, turgid, shining, and transversely striated; aperture oblong; lips thick; columella with two plaits; outer lip smooth, and thickened in the middle. Found in the blue clay at Highgate.

Helicina expansa. F. 68. Spire conical, somewhat depressed; volutions carinated; obscurely striated; ventricose beneath; callus expanded; aperture quadrangular.

Helix globosus. F. 64. Subconic, inflated, covered with obscure transverse striæ; outer lip reflected; body very large; spire a third the length of the body; umbilicus concealed by the coating on the inner lip. Found at Shalcombe, Isle of Wight.

Calyptræa orbiculata. F. 79. Orbicular, smooth, depressed, and slightly striate spirally.

Calyptræa trochiformis. F. 89. Trochiform, volutions somewhat rounded, and covered with long spines.

Infundibulum.—Obconical, hollow beneath, spirally convo ute; with a central spiral columella, and a spirally decurrent plate or valve within; aperture round, expanded; lip sharp and entire.

Infundibulum rectum. F. 35. Conical, striated concentrically; apex central, acute; volutions obsolete; valve rectangular; columella slender. Found at Holywell, near Ipswich.

Pileopsis unguis. F. 59. Depressed, suborbicular, obscurely radiated; vertex recurved obliquely, acute, and extended beyond the base; height about a third of its width. Found at Holywell crags.

Pileolus.—Shell conical, with a sub-central vertex, placed upright; base concave, centre tumid; margin thin; outer lip prominent, interior lip crenulated, with a very short internal spire.

Pileolus plicatus. F. 40. The depressed cushion provided with an elevated margin; centre subdivided by a sulcus; inner lip deeply crenulated; height nearly equal to the diameter of the base. Found in the oolite under the Bradford clay, at Ancliff. F. 41 represents the internal structure.

Emarginula crassa. F. 48. Oval, very thick, obtusely conical, furrowed, with four or five striæ between each furrow; fissure wide. Found in the crag, near Ipswich.

Patella lævis. Depressed, slender, conical, smooth, shining; aperture obovate; apex eccentric; height about a third of its length. Found in the alum clay at Whitby.

CLASS VI.—CONCHIFERA.

ORDER I.—MONOMYARIA.

Family I.—Brachiopoda.

Magus.—Bivalve, inequivalve, equilateral, one valve with an angular sinus along an incurved beak; line of the hinge and back of the other valve straight, with two projections near the middle.

A partial longitudinal septum, with appendages attached to the hinge within.

Magus pumilus. F. 164. The beaked valve is smooth and hemispherical, with a circular edge, beak small and incurved; the other almost flat, with a lengthened transverse back. Found in the chalk, near Marudesley, Norfolk.

Pentameaus.—Inequivalve, with the sides equal, one valve divided into two parts by a longitudinal internal septum, the other into three parts by two septa; beaks incurved and imperforate.

Pentamerus Aylsfordii. F. 165. Nearly orbicular, longitudinally furrowed; tripartite valve convex, with a prominent incurved beak; bipartite valve gibbous, incurved, conical, with a greatly incurved beak. Found at Croft-Ambrey park.

Lingula mytilloides. F. 139. Beak indistinct, anterior, end slightly truncated, somewhat depressed towards the front; edge nearly straight, of a greyish blue colour, with a shining surface. Found in the dark-coloured limestone at Walsingham, county of Durham.

Spirifer cuspidatus. F. 163. Inversely pyramidal, longitudinally sulcated; back depressed, triangular, and equilateral; front elevated by a semicircular sinus, corresponding to a large longitudinal ridge, and depression in the under valve. Found below St Vincent's rock, near Bristol.

Terebratula concinna. F. 160. Almost globose, with very sharp longitudinal ribs covering the whole shell, seven on the elevated centre, and twelve or more on each side, regular; beak (f. 161) projecting. Found at Aynhoc.

Terebratula ornithocephala. F. 147. Ovate, gibbous, front straight, bounded by two obtuse lateral depressions, alike in both valves; perforation large, placed in the larger valve; breadth four-fifths of its length; sides somewhat compressed, producing an obtuse angular projection in front. Found in the blue lias at Pickeridge.

Productus.—Equilateral, valves unequal, margin more or less cylindrical; hinge transverse linear; one valve convex, the other flat or concave.

Productus spinulosus. F. 166. Semicircular, a little depressed; hinge long and straight; convex valve gibbous towards the beak, covered with numerous small spines with indistinct ears; the other valve concave, and beset with numerous spines. Found in the limestone of Mid-Lothian, Scotland.

Dianchora.—Bivalve, inequivalve; one valve, with an aperture instead of a beak, by which the shell was attached to marine bodies; the other valve provided with a beak and ears; hinge without teeth.

Dianchora striata. F. 158. Somewhat spoon-shaped, oblique, beak prominent; free valve with a few obscure ribs at its base. Found at Chute Farm, near Warminster.

Ostrea Marshii. F. 122. Oblique, longer than wide, both valves deeply plaited, with seven or eight angular divergent rib-like undulations; edge thick, flattened. Found in the vicinity of Felmershaw.

Hinnites *Dubisoni.* F. 135. Bivalve, inequivalve sides nearly equal, radiated; eared; area of the hinge quadrangular, triplicate; cartilage sunk in a deep longitudinal pit; lateral portions in which the ligament is placed striated; sinus, for the reception of the byssus, small; muscular impression large, and connected with indentations remaining for the attachment of the mantle parallel to the margin of the valves.

Exogyra.—Inequivalve, unequal-sided, attached to other bodies; umbones spirally curved to one side; pit of the hinge curved, nearly linear; an obtuse tooth in the flat, free valve, which fits into a cavity parallel with the hinge pit, in the convex attached valve; each valve provided with one muscular impression.

Exogyra conica. F. 137 and 138. Smooth, deep valve more or less gibbous, curved, with an obtuse carination along the middle; flat valve suborbicular, with a greatly incurved, impressed beak. Found at Folkstone.

Sphæra.—Globular, with short, obtuse, incurved ears, with one central and two remote teeth about the hinge, the line of which is lengthened, slightly incurved, and terminating at one end with an indistinct tooth, beneath the insertion of the ear; in its centre is a large, irregularly formed tooth, transversely depressed, and pointing towards the incurved beak.

Sphæra corrugata. F. 154. Gibbous, ponderous; surface with coarse corrugations; rugæ placed transversely and obtuse, more conspicuous near the sides, nearly smooth in the middle, but extends over the ears. Found in the iron sand formation, east of Sandown bay, Isle of Wight.

Pecten quinquecostata. F. 129. Subtriangular, somewhat oblique, semicircular, and toothed in front; convex valve ribbed and inflated, with six principal costæ, and four intermediate and lesser ones; surface covered with fine transverse striæ; upper valve flat and toothed. Found in the Sussex chalk, near Lewes.

Plagiostoma gigantea. F. 157. Depressed, and smooth, deltoid, with the posterior side rounded into the front; ears small, anterior one longest, situated in a large, broad, and straight furrow; beaks pointed; surface with obscurely divergent striæ. Found in the fœtid limestone at Bath.

Lima gibbosa. F. 145. Elongated, gibbous; ears not conspicuous; centre of the valves with about eighteen divergent striæ, and smooth at the sides; twice as long as wide. Found in coarse limestone, in Cotswold hills, Glamorganshire.

Inoceamus.—Inequivalve, free, longitudinal, and somewhat inequilateral, hinge consisting of a callus, which supports the ligament, at one end crenulated, above which is placed the beaks.

Inocermus sulcatus. F. 152. Oblong, spatuliform, with about nine longitudinal and strong ribs, which have much the character of plaits of ostrea crista-galli; beaks prominent, one of which is considerably incurved and acute. Found at Lewes.

Gervillia.—Inequivalve, unequal-sided, oblique, greatly elongated; beaks placed near the anterior extremity; hinge long; divided into several pits, and provided with many, more or less lamelliform teeth; one muscular impression in each valve.

Gervillia aviculoides. F. 142 and 143. Obliquely lanceolate, curved, and pointed at both extremities; slope in which the hinge is situated nearly half the length of the shell; teeth of the hinge few, and similarly disposed. Found in the Shanklin sand.

Pinna lanceolata. Greatly elongated, its length being four times its breadth; lanceolate, slightly curved, longitudinally striated, with a quadrangular section; each valve divided into two flat parts by a central line. Found in the ocheraceous limestone, near Scarborough.

Pachymya.—Transversely elongated, very thick, subbilobate, with the beaks near the posterior extremity. Ligament partly immersed, and attached to prominent processes or fulcra.

Pachymya gigas. F. 144. Shell thicker than long, slightly curved with parallel edges; posterior extremity small and round, anterior somewhat truncated, close at both ends. Found in the chalk at Lyme Regis.

Chama haliotoidea. F. 133. Somewhat depressed, oval, surface uneven, with an external longitudinal, curved, nearly marginal line, and a deep, sunk, curved furrow inside the deepest valve, extending from the beak around the deep side, from which it shelves to a flat surface, extending to the margin, where it is broad, and slightly crenate within; muscular impression large. Found in the green sand, parish of St Mary Donhead, Wiltshire.

Diseras arietina. F. 125. Somewhat heart-shaped, with divergent beaks.

Unio subconstrictus. F. 132. Ovate oblong, its length being twice its breadth; a constriction passing from the front of the shell towards the beak on the anterior side, which is subtruncated. Found in Derbyshire.

Trigonia striata. F. 162. Equivalve, inequilateral, trigonal; hinge with two divergent, elongated, compressed teeth, transversely grooved on each side, and fitting into furrowed cavities in the opposite valve.

Megalodon.—Equivalve, longitudinal, accuminated towards the beaks; hinge provided with a long external ligament, a large bifid tooth placed upon a septum, across the beak of the right valve, and one irregular and one pointed tooth similarly situate in the left valve; a small pit near the teeth for the reception of the anterior ligament.

Megalodon aculeata. F. 140. Smooth, somewhat lanceolate, thick, with pointed incurved beaks; the surface uniformly convex. Found in the limestone at Bradley, Devonshire.

Pectunculus costatus. F. 130. Shell orbicular, depressed, with twenty-five longitudinal, sharp ridges, and a few transverse striæ; hinge provided with fourteen teeth; margin crenulated within. Found at Hordwell Cliff.

Axinus.—Equivalve, transverse, and free; anterior side very short; posterior side considerably produced, truncated, and with a lunette near the beaks; hinge provided with a long oblique ligament, situated in a furrow.

Axinus angulatus. F. 153. Subhexangular, posterior side somewhat cuneiform, with a subcarination running from the sides to the beaks; posterior carination very obtuse. Found in the London clay, at Islington.

Hipponium.—Equivalve, transverse; valves inflated; somewhat bilobed; hinge with a single rugged tooth; cartilage external.

Hippodium ponderosum. F. 151. Thick, gibbous, and rugged; transversely furrowed, and the lines of growth strongly marked; anterior lobe somewhat angular, and pointed; posterior lobe smaller, and rounded. Found at Toddenham, near Shipston-on-Stour.

Cardita planicostata. F. 127. With about twenty, longitudinal, divergent, flat, broad ribs, and the interstices very narrow; muscular impressions large and deep; margins strongly crenulated.

Cardita ajar. F. 126. Subcordate, with compressed longitudinal angular ribs, and the furrows subtuberculate; anal depression round.

Venus lineolata. F. 136. Somewhat gibbous, and cordiform; partly covered with zigzag striæ; anterior side smooth; edge entire; beak rather prominent; cicatrix slightly defined and cordate. Found at Blackdown, near Collumpton, Devonshire.

Cytheria exoleta. F. 123. Orbicular, finely striated concentrically; and with the lines of growth well defined; beaks prominent; lunale heart-shaped, and pointed.

Myaconcha.—Equivalve, sides oblique, very unequal; hinge with an elongated oblique tooth in the left valve, and provided with an external ligament; beaks placed close to the posterior extremity, destitute of a sinus in the impression of the mantle.

Myaconcha crassa. F. 146. Ovate, mytiliform, thick-pointed at one end, and obtuse at the other, convex very slightly wrinkled; ligament placed in a wide and deep groove, length double its breadth. Found at Dundry, near Bristol, in the Ironshot oolite.

Crassina lurida. F. 134. Transversely oblong, depressed, with numerous transverse, indistinct ribs; lunette elliptical, sharp; margin crenulated internally. Found in blue sandy clay, Foxhill quarries, Gloucestershire.

Thetis.—Equivalve, subequilateral, more or less orbicular, and very convex; ligament marginal; hinge with three or four accuminated teeth; the line of attachment of the mantle, with a deep sinus extending nearly to the beak; muscular impressions orbicular, small, and remote from the hinge; ligament internal.

Thetis minor. F. 148. Gibbous, wider than long; posterior edge rounded. Found in the green sand, Parham-Park, Sussex.

Petricola laminosa. F. 141. Ovate, gibbous, with erect concentric laminæ; posterior side subcuneiform; a single broad bifid tooth in the left valve, and two small teeth in the other. Found in the Suffolk crag.

Lutraria gibbosa. F. 131. Gibbous, anterior side much wider than the posterior, recurved, truncated, and gaping; length and depth equal; beaks much incurved and pointed. Found in the oolite limestone, Bath.

Mya mandibula. F. 124. Gibbous, depressed in the middle, transversely undulated; anterior side square, gaping, aperture oblong; posterior side somewhat straight; depth two-thirds its length; beaks incurved and pointed. Found in Micaceous sandstone at Devizes, Wiltshire.

Pholadomya.—Transverse, thin, subhyaline, ventricose; the anterior portion short, rounded, the posterior more or less angulated and gaping; hinge composed of an elongated subtrigonal foveola, and a marginal plate in each valve; ligament, external, rather short; two indistinct muscular impressions; sinus in the impression of the mantle large; umbones approximated.

Pholadomya murchisoni. F. 150. Ovate, beaks very large; anterior side short, with six or seven elevated, obtuse, knotted, divergent ribs, occupying the middle area of the valves. Found at Brora, Sutherlandshire.

Teredo antenautæ. F. 167. Valves transversely striated; the anterior side with numerous, smooth, striæ; dorsal and posterior accessory valves shelly. Found in Essex.

CLASS VII.—CIRRIPEDA.

ORDER I.—PEDUNCULATA.

Pollicipes sulcatus. F. 168. Valves with longitudinal, elevated striæ, the central valve elongated, rhomboidal; posterior valve arched, broad lanceolate, and subcarinated, both marked with irregular, elevated, longitudinal striæ. Found in the upper chalk at Norwich.

ORDER II.—SESSILIA.

Balanus tesselatus. F. 53. Obliquely conical, thin, with six indistinctly ribbed valves, smooth; interstices transversely striated, producing a tesselated appearance; aperture oval. Found at Bramerton, Norfolk.

CLASS VIII.—ANNELIDES.

Serpula crassa. F. 169. Acutely conical, round within, triangular externally, about four times as large as the diameter of the end at the aperture. Found at Highgate.

Spirorbis concavus. F. 51. Discoidal, involute, concave on one side; the last volution but slightly attached. Found in the green sand at Dilton, near Westbury.

Dentalium nitens. F. 74. Slightly incurved, gently tapering to the smaller end; surface smooth and shining; aperture circular. Found in clay at Highgate.

The total number of species of fossil shells, which have hitherto been discovered in the tertiary series, is 3036. Of these, there are found in the Eocene period of strata, 1238 species; in the Miocene, 1021; in the older and newer Pliocene divisions, 777. In the newer Pliocene period, there are from 90 to 95 per cent. of *recent* species; in the older Pliocene period, from 35 to 50 per cent.; in the Miocene period, 18 per cent.; and in the Eocene, 3½ per cent.

The following species of shells are peculiar to the Pliocene Tertiary Period, and figured in pl. LXVI. Turbo rugosus, f. 106; Trochus Magus, f. 97; Solarium Variegatum, f. 105; Tornatella fasciata, f. 95; Pleurotoma Vulpecula, f. 103; P. rotata, f. 92; Fusus crispus, f. 102; Buccinum prismaticum, f. 104; B. Semistriatum, f. 94; Mitra plicatula, f. 93; Cassidaria echinophora, f. 96; Cytherea exoleta, f. 123.

Miocene Tertiary Period.

Voluta rarispina, f. 87; Mitra Dufrenei, f. 101; Pleurotoma denticula, f. 107; P. tuberculosa, f. 86; Nerita Plutonis, f. 91; Turitella proto, f. 90; Fasciolaria turbinelloides, f. 99; Cardita ajar, f. 126.

Eocene Tertiary Period.

Voluta costaria, f. 108; Pleurotoma clavicularis, f. 84; Cassidaria carinata, f. 85; Nerita tricarinata, f. 83; Calytræa trochiformis, f. 89; Turitella imbricataria, f. 88; Voluta digitalina, f. 98; Natica epiglottina, f. 100; Solarium canaliculatum, f. 82. Cardita planicostata, f. 127; Quinqueloculina Striatula, f. 110; Clavulina corrugata, f. 112.

To illustrate the variety which exists among these fossils, and, at the same time, to give an idea of the manner in which they disagree with recent shells, we shall give the results of the examination of British fossil shells. The number of genera at present known to British naturalists is about 140, which comprise nearly 3000 species. Of these

		Species.
58	genera are simple univalves, which comprise	406
62	— simple bivalves,	590
3	— complicated bivalves,	51
12	— multilocular bivalves,	240

To ascertain the relative proportion of the different classes contained in strata of different periods, we make three principal divisions in the formations containing organic remains: the first is the most ancient series; the second or middle division contains the remainder of the secondary strata; and the third consists of the tertiary deposits. The first, which is the lowest or most ancient division, may be subdivided into two series of formation:—

1. Carboniferous order of Mr Conybeare.

	Species.
Simple univalves,	27
Simple bivalves,	34
Complicated bivalves,	46
Multilocular univalves,	33
	140

2. From the carboniferous to the lias inclusive.

	Species.
Simple univalves,	9
Simple bivalves,	33
Complicated bivalves,	5
Multilocular univalves,	50
	97

The second or middle division, from the lias upwards, includes the entire oolitic series, and the strata up to the chalk inclusive:-

	Species.
Simple univalves,	106
Simple bivalves,	375
Complicated bivalves,	0
Multilocular univalves,	139
	620

The third, or most recent division, comprises all the beds above the chalk, or the tertiary formations:—

	Species.
Simple univalves,	259
Simple bivalves,	141
Complicated bivalves,	0
Multilocular univalves,	8
	408

The shells of the most ancient formations exceed, in complexity of structure, those in the subsequent strata, and in our present seas. They are more frequently endowed with that complicated structure which enabled their inhabitants to rise and sink with them in the water. Of this class are the numerous race of many-chambered univalves—the nautilites, the ammonites, and orthoceratites; and of the class of complicated bivalves are the spirifers, and the genera pentameras and productus. The table given above furnishes the means of comparing the numbers which existed in each class, during separate periods, or geological eras.

First Division.—Ancient strata, including lias.

	Species.	
Simple univalves,	36	
Simple bivalves,	67	
Complicated bivalves,	51	134
Multilocular univalves,	83	
	237	

Second and Third Divisions.—Remaining strata, above the lias up to diluvian.

	Species	
Simple univalves,	365	
Simple bivalves,	516	
Complicated bivalves.	0	147
Multilocular univalves,	147	
	1028	

It will thus be perceived, that the number of complex species in the first division is nearly equal to those in the immense series of succeeding strata, 134 being peculiar to the lowest, and 147 to the remainder. But the individuals are infinitely more numerous in the older strata than in the later, and give a more decided character to those formations than appears from a comparison of genera or species; and the class of complicated bivalves is wholly limited to this older division. The difference is still more striking when we compare the first with the third division; the simple univalves in the former being to those in the latter in the proportion of one to seven; but the complicated species in the same divisions are in the reverse ratio nearly of seventeen to one. On comparing the proportions which the classes of shells under each division bear to each other, differences equally remarkable are observable. Thus the univalves in the first division are to the complex species as one to four; in the second as one to one and one third only; and in the third, as thirty-two to one; so that, as a general rule, it may be stated, that the ancient formations are characterized by complicated shells, the middle series by bivalves, and the upper by simple bivalves.

CLASS IX.—CRUSTACEA.

This class of fossils has been but little attended to, and although rich in species, may be considered as a blank in the History of Organic Remains. In the Jurassic limestone fossil crustacea abound, and Count Munster has collected about sixty species from a single stratum.

In the present state, therefore, of this department, we shall not attempt a classification, but merely give two examples, which we have figured on pl. 65. f 50, is a crab from the Island of Shepey; f. 47 the claw of a crab from Mæstricht.

The most widely diffused remains of all this class are the trilobites; they are found all over the north of Europe, North America, the Andes in South America, India, and in Africa at the Cape of Good Hope. But these have hitherto not been found in any strata which is more recent than the carboniferous series; and no other crustaceous animals, excepting of these forms, which are also *Entromonstraceous*, have been found associated with these trilobites: so that during the long periods that must have intervened between the deposits of the first strata containing fossils, and the termination of the coal formation. And it would appear that the trilobites were the only representatives of the *Crustacea*, which is now so much varied in families, orders, and genera. We have given an example of this family, by a representation of the genus *Serolis*, with an elongated caudal process, and also of the *Calymene Blumenbachii*, f. 95; another well marked trilobite, from the transition limestone of Dudley. F. 48 represents a fossil shrimp from Anspach. F. 46, tailed Trilobite from Dudley.

CLASS X.—ARACHNIDES.

The only animal of this class which has been found in a fossil state, is a scorpion discovered in the ancient coal formation, at the village of Chomle, near Radnitz, on the south-east of Prague. It is remarkable that the horny covering of this scorpion is in a complete state of preservation, being neither decomposed nor carbonized. This substance, which is the same as the elytrine of beetles, seems to have the property of resisting decomposition and mineralization.

Mr W. Austin found an animal in the Ironstone of Colebrook dale, which Mr Prestwich described in the Philosophical Magazine, and supposed it a spider. Professor Buckland has lately laid open that animal, and finds that it is not a spider, but a species of curculionidæ, a coleopterous insect.

CLASS XI.—INSECTS.

There have been extremely few insects found in a mineralized state. Coleopterous insects of two genera have been found in the ironstone of Colebrook dale. There is in the fine collection of Count Munster, twenty-five species of fossil insects found in the Jurassic limestone of Solenhofen. These are of different orders, viz. libellula, ranatera, and several species of coleopterous insects. Marcel says there have been ascertained insects of sixty-two genera in the tertiary gypsum, fresh water formation of Aix. These belong to the orders Coleoptera, Diptera, and Hemiptera. F. 39, pl. 65, represents an insect in stone from Papenheim; and figs. 40, 41, 42, and 43, are insects from the coal-slate, as figured by Liwhydd. F. 45 is a wing of an insect in calcarious spar, lately found at Fairybank, parish of Bothwell, Lanarkshire, by Mr John Craig of that parish. It was discovered near the bottom of a freestone rock, twenty feet in thickness.

CLASS XII.—ECHINODERMATA.

Professor Goldfuss, who has given minute attention to this department of natural history, is of opinion, that almost all the fossil echini, and asteria, belong to genera now existing. The echini appear to have existed through all the formations from the transition series to the present period; while the star-fish have not been found in older strata than the Muschel-kalk. We have given a few representations of these. F. 54, an echinus from Calne; f. 55, a cidaris from the same locality; f. 56, a nucleolites from the Calcaire Grossier, Normandy; f. 57, a *Clypeus sinuatus* from Oxfordshire; and a *C. rotundatus*, f. 59; f. 58, a *Spantangus Cor* from Kent.

Of the star fish, we have represented three species;—f. 51, a fossil asteria, found at Horsington; f. 52, an *Oppiura Milleri* from the marlstone of Yorkshire; f. 53, an asterias, which is nearly allied to the *A. pentagonaster* of Parkinson

CLASS XIII.—POLYPI.

The organic remains of this class are exceedingly perfect in their structure, and extremely numerous. There are beds of limestone almost entirely made up of these fossils, more especially the encrinites. The most conspicuous of these are the entrochial marble of Derbyshire, and the carboniferous limestone near Bristol. These fossils also abound in the limestone, on the coast of Fife, near Kinghorn. We have illustrated the order Crinoidea, by representations of the encrinus liliformis, or lily encronite, which abounds in the Muschel-kalk of Germany; f. 67 and 68 is one of the vertebræ of this species. Mr Parkinson has shown, that the lily encrinite is composed of the amazing number of 30,000 distinct bones, or articulations. F. 70 is a specimen of the tulip alcyonia, or *Siphonia*, from the green sand of Blackdown. F. 69 is a fossil sponge from Farringdon, which occurs plentifully in the ferruginous sand. F. 61, the *Madrepora truncata* from Gothland. F. 66, a fossil alconite; f. 64, a ramose milleporite, imbedded in compact limestone from Wiltshire; f. 63, a branch of Isis from Sicily; f. 62, a branch of ramose alcyonite from Berkshire, nearly allied to *A. digitatum;* f. 60, is a ramose tubiporite from Mendip hills.

FOSSIL VEGETABLES.

The same striking changes which have been described as having taken place in the animal kingdom, are equally manifest in the vegetable kingdom. It has been shown, that animal life first exhibited itself in the ocean; and in like manner we find, that the plants, occurring in the older strata, consist of those which have had a marine origin; and these seem to have been formed as food for the oldest oceanic inhabitants.

The fossil vegetables, which are distributed through the three geological epochs, indicating, in each respective group, the same successions of the diminution of temperature upon the land, as have been inferred from the remains of vegetables of the sea. Thus in the transition series we have the association of a few *existing* families, with *extinct* families, which indicate a climate hotter than the present time.

In the secondary formations, the fossil families are more numerously assimilated to the existing families; and many of the older families, and even genera, disappear.

In the tertiary strata, almost all the families of the first series are lost, and even many of the second disappear; and a more complicated vegetation takes place. In almost all the strata, beautiful, perfect, and very characteristic specimens are constantly met with; and we shall restrict this comprehensive subject to the mere representations of a few striking examples.

Pl. 65, f. 82, calcarious fossil wood found near Bath. F. 71, specimen of schistes, with an impression of the bark of a tree; and f. 73, 74, 75, and 81, the impression of leaves of plants. F. 72 is an impression of the stalk of a plant in sandstone; and f. 74 the impression of a leaf on the same substance. F. 78, a nut from the island of Sheppey, the exact appearance of the kernel is preserved in the case. F. 77—79, and 80, represent fossil nuts found in Leicestershire; and f. 76 is the representation of another nut. F.83, fossil bark of a tree; 84, nut; 65, fossil seed pad.

As respects vegetable remains in a fossil state, subterranean collections of bituminized wood, and other vegetable matter, are found at various depths in different parts of the world. Cannell coal as well as anthracite, frequently exhibits traces of ligneous texture in its substance, which could have been derived only from wood. The argillaceous iron-stone and slates that accompany coal contain, with remains of many other unknown vegetables, parts of various cryptogamous plants, the recent analogies of which are found only in tropical regions. It is impossible to give an idea, without figures, of the beauty and variety of the impressions thus found in the argillaceous and bituminous slate formations of the coal measures.—Concerning the mineral matters which enter into the composition of fossils that are denominated *petrifactions*—and all organic remains are thus termed whose original particles have given place to matter of another sort—they are chiefly of three kinds, viz., calcarious, silicious, and argillaceous. Iron and copper pyrites are found performing the same part, though with less frequency than the substance first mentioned. Fluor rarely occurs as the replacing material of fossils. The precise manner in which the substitution takes place it is difficult in many cases to conceive of: in general, we are sure that the mineral matter is slowly deposited by intromission into the original interstices and cavities of the organic body, or is introduced to fill the spaces which have been produced by the partial removal of the original organic substance.

In conclusion, we have only to remark concerning these monuments of former worlds, that, in the several formations composing the outer part of the earth down to the primitive rocks, the fossil remains which they contain vary in each formation, and at the same time differ from those beings which now exist. The discovery of animals peculiar to certain formations, and the general agreement with each other of the fossils of the same formations, have led to the belief that these several formations were the consequences of successive changes effected on the earth's surface; and that the contained fossils are the preserved remains of the several creations which had been successively formed to accord with the state of the planet under its several changes. In the lower, and consequently earlier formed, strata, are found the bituminized remains of unknown vegetables; and in the masses of mountain limestone are immense accumulations of crinoideal and terebratular remains, of the numerous species of which tribes scarcely a living individual can now be found. Here also exist the multilocular univalves in such abundance, while the genus *nautilus* is the only one of this family whose existence through a few species is continued to the present day. The fossils of the next superior formation—the lias—afford proofs, also, of their having been the production of a distinct creation. But the most decided proof of these fossils being the remains of another world, and of a distinct creation, is their containing relics of a tribe of enormous marine animals, such as quadrupeds possessing the blended structure of fish and lizard, no traces of which have been observed in the preceding strata. The fossil remains, through the succeeding higher formations of oolite, green sand, chalk, and clay, show new genera, both of saurian and testaceous animals; and when we follow, on the surface of the vast mass of upper clay, the traces of diluvial action, and the desolation which accompanied the last grand catastrophe which the planet appears to have sustained, we there find the remains of another creation—the terrestrial quadrupeds. These changes in the state of the planet, and this partial destruction, appear to have been succeeded by the creation of man, and of such quadrupeds and other animals as were fit inhabitants of the earth after its last change; from whence it appears that beings have proceeded, gradually increasing in superiority, from testaceous animals to reptiles, marine and fresh water amphibia, quadrupeds, and, lastly, to man.

For further information, see Parkinson's *Organic Remains of a Former World* (London, 1804—11, 3 vols., 4to); and his *Introduction to the Study of Organic Fossil Remains* (1822); Buckland's *Reliquiæ Diluvianæ* (London, 1824—28); and Cuvier's great work *Ossemens Fossiles* (3d ed., 1826, 5 vols.); Schlottheim's *Beiträge zur Flora Unterwelt;* and Sternberg's *Darstellung der Flora der Vorwelt;* Link's *Urwelt und das Alterthum* (Berlin, 1821); Schubert's *Urwelt und die Fixsterne* (Dresden, 1822); and Krüger's *Geschichte der Urwelt* (Quedlinburg, 1822). Godman's Natural History describes the fossil remains of North America. See, also, our articles *Geology*, *Mastodon*, *Mammoth*, *Megalotherium*, *Megalosaurus*, &c.

ORGANOLOGY; a term used to denote a branch of physiology which treats, in particular, of the different organs of animals, especially of the human species. It is, as may well be imagined, one of the most interesting branches of natural science.

ORGIES (ὄργια); the mystic rites and wild revels celebrated in honour of Bacchus; also the festivals and mysteries of other deities. (See *Bacchus*, and *Mysteries*.) The term has hence been applied to any scene of riotous mirth and excessive revelry.

ORIENTAL EMPIRE. See *Byzantine Empire*.

ORIENTAL LITERATURE. This vast field of learning, which comprises the languages and literature of nations, some of which are totally distinct from others, has been cultivated, in recent times, with great zeal. Not only is the number of Oriental languages, now studied, much greater than formerly, but they are much more accurately known. Formerly, even the most celebrated Orientalists, in general, possessed but a superficial knowledge; and the difference between the learning required from a classical philologist, and that expected from an Orientalist, in his branch, was very great. Many Orientalists were unable to conjugate or decline the Arabic correctly. The grammatical knowledge of some of these languages has become much more profound in our time, though there have been, yet, comparatively few Oriental works printed. This great change must be traced, in part, to the writings of Silvestre de Sacy, who may be considered as having more knowledge of Arabic than any other European scholar. His *Grammaire Arabe* (Paris, 1810) gave an entirely new turn to the study of this language, and indirectly influenced the study of Persian and Hebrew. This progress is, in part, also attributable to the zeal and activity of the British in India, which have been exerted not only on the Indian languages, but also in the publication of Persian and Arabian works. From British presses in the East Indies, at Serampore and Calcutta, and from the Turkish in Scutari and Constantinople, have issued the most important works of Oriental literature; for instance, the original dictionaries of the Arabs, Persians, and Turks. Not only has the study of the languages been much extended in recent times, but much has been done for its application to scientifical, historical, geographical, mythological, and philosophical investigations. It must be confessed, indeed, that instances are not wanting, in which inquirers have been seduced, by these discoveries, to erroneous theories, particularly through unfounded etymologies. Five Asiatic societies have been established, by Europeans, for the promotion of the study of Oriental literature, three of which are in India (in Calcutta, Bombay, and Madras), and are composed of scholars and military men. Each of them publishes its Transactions. That of Calcutta has published fifteen volumes, under the name of Asiatic Researches. That of Bombay, of a much later date, has published at least three volumes. The two other societies are that of Paris (founded in 1822, under the presidency of Silvestre de Sacy), and that of London (royal Asiatic society, founded in 1820, under the presidency of Colebrooke). The Paris society publishes the *Journal Asiatique.* The London society has published several volumes of extremely valuable Transactions. The Asiatic Journal is also published in London, which is useful for Asiatic intelligence, but in which, however, the literary articles are not generally of a very high character. The Annals of Oriental Literature, begun some years ago in London, ceased with the third volume. Similar periodicals appear in Calcutta and Malacca. Germany has, in this department, the *Fundgruben der Orients* (Mines of the East), published at Vienna, chiefly supported by the efforts of Von Hammer, and Schlegel's *Indische Bibliothek*, published at Bonn. There are institutions for instruction in the Oriental languages at Fort William in the East Indies, at Hayleybury in England (for officers in the East India company), at Paris, Vienna, and Petersburg. The libraries of Paris, London, Oxford, the Escurial, Rome, Gotha, Vienna, Berlin, Copenhagen, Upsal, Petersburg, and Constantinople, contain the richest materials in Oriental literature. Gotha contains more Oriental manuscripts than any other German city. They were collected by Seetzen, in Aleppo, Damascus, Jerusalem, and Cairo. Petersburg possesses the richest collection of Oriental (i. e. Mohammedan) coins, the inspector of which, Mr Frahn, is the most learned Oriental numismatist. The collection of manuscripts, in that city, has been increased by several taken during the last invasion of Turkey by the Russians, and the study of the Oriental languages will be greatly benefited by the newly-established Oriental institution at Petersburg, intended for the instruction of Russian professors, interpreters, and diplomatic agents. The members will publish an Asiatic Journal. The languages to be taught are Arabian, Persian, Turkish, Tartar, Chinese, Mantchoo, Sanscrit, Tibetan, Mongolian, Calmuck, Georgian, and Armenian. After a study of five years, the students will be sent to the respective countries to perfect themselves.

Some of the most important works recently published in the department of Oriental literature, are as follows: In Sanscrit, the ancient learned language of India, great progress has been made by Wilson's Sanscrit and English Dictionary (Calcutta, 1819), before which there was no dictionary of that language. The best grammar is, as yet, that of Wilkins (London, 1808). A more recent one, by Yates (Calcutta, 1820), has given some valuable additions on prosody and grammatical terminology, but is, in other respects, not thorough. Frank, a German, published a *Grammatika Sanskrita* (Wurzburg, 1823); Bopp an *Ausführliches Lehrgebäude der Sanskritsprache* (Berlin, 1825, 4to); Frank also published a *Chrestomathie* (Munich, 1820—1821). Among the Indian writings published, are *Nala*, a romantic episode, from the Mahabharata, Sanscrit, and Latin, by Bopp (London, 1819); *Ardschuna's Visit to the Heaven of Indra;* also an episode of the Mahabharata, Sanscrit, and German, by Bopp (Berlin, 1824, 4to); *Bhagavadgita*, a philosophical episode of the Mahábharata, Sanscrit, and Latin, by Schlegel (Bonn, 1823). The whole poem *Ramâjana*, with a Latin translation, in eight vols, without the notes, has been published by A. W. von Schlegel. Among the works most recently published in India is the poem *Meghaduta* (Messenger of the Clouds), by Calidasa, with an English translation by Wilson (Calcutta, 1813); the two epic poems *Kiratardshunija* (Calcutta, 1814) and *Sisubalabadha* (Calcutta, 1815); *Dajakrama Sangraha*, a dissertation on the Indian law of inheritance (Calcutta, 1818). Haughton, professor at Hayleybury, has begun a new edition of the Code of Menu. Investigations in the department of comparative philology have been presented, by Bopp, in his *Conjugationsystem der Sanskritsprache* (Frankfort, 1816), and in the Annals of Oriental Literature. Schlegel has also promised an *Etymologicum Novum* relating to the same subject. Besides the Sanscrit, the living languages of India, more or less connected with it, have been cultivated with great zeal by the British: for most of them we now possess excellent manuals; for instance, for the Bengalese, the Grammar and Reader of Haughton (London, 1831); the Dictionary by Carey (Serampore, 1815); for the Hindoostanee, the Grammar by Shakespear (London, 1818); and the Dictionary by the same (London, 1820); for the Mahratta, the Grammar and Dictionary by Carey (Serampore, 1808 and 1810). Authors in these modern Indian languages have also been printed. (See *Indian Languages and Literature*.) In the department of Chinese literature, Morrison's Grammar (Serampore, 1815); his Chinese and English Dictionary (Macao, 1815—1820); Abel Rémusat's *Elémens de la Grammaire Chinoise* (Paris, 1822), are works of high reputation. The Asiatic society at Paris has set on foot a revision of Rodriguez's Grammar of the Japanese. For the Tartar languages, we have Rémusat's *Recherches sur les Langues Tartares* (Paris, 1820). Klaproth published, at Paris, a Dictionary of the Mantchoo Tartar. Several Tartar works have been published at Kazan, chiefly destined for instruction in the Mohammedan religion; the Russian imperial chancellor, count Romanzoff, has ordered the printing of the Tartar historian Abulgasi. Works in Turkish, which is a Tartar language, are continually issued from the presses in Scutari and Constantinople. Jaubert has published a new Turkish Grammar, at Paris, but it is superficial. As regards the ancient Persian, that is, the Zend and Pelahvi languages, which Anquetil de Perron knew but imperfectly, we may expect more profound researches by means of the manuscripts which Rask has carried to Copenhagen. Among them are also writings in the Pali language, the ancient sacred idiom of Farther India. *Desatir* (Bombay, 1818) claims, likewise, to belong to the ancient Persian literature, but is probably of more modern origin. For the modern Persian, the original dictionaries, *Shems ellogat* (Calcutta, 1806) and *Burkani Kati* (Calcutta, 1808) are important. The most complete grammar is that by Lumsden (Calcutta, 1810, 2 vols., folio). Of the rich literature of this beautiful idiom, many works have been published in India. The most important among the latest, are the edition of the *Shanameh* of Ferdusi (Calcutta, 1811) and the *Iskendernameh* of Nisami (Calcutta, 1812). Sacy has published a religious poem, *Pend-nameh, ou le Livre des Conseils* (Paris, 1819). Kosegarten has published some extracts from the Persian tales of Nechschebi, in the *Tutinameh* (by Iken and Kosegarten, Stuttgard, 1822). Goerres has given an abstract of the great historical poem *Shanameh*, under the title *Heldenbuch von Iran* (Berlin, 1820). We have a view of the most important poets of Persia in Hammer's *Geschichte der Schönen Redekünste Persiens* (Vienna, 1818). (See *Persian Language and Literature*.) The study of Arabic—a noble, manly, rich, and cultivated idiom—has been much facilitated by the publication of the best original Arabic dictionary, *Kamus* (Calcutta, 1817). Sacy has published a new edition of his Grammar and *Chrestomathie* (Paris, 1826, 2 vols.) Kosegarten's *Chrestomathia Arabica* (Leipsic, 1824) contains unpublished historical and poetical selections, with a dictionary and grammatical explanations. Freitag, in Bonn, is occupied with a new

Arabic-Latin dictionary. A work of classic value for the study of Arabic, is Sacy's *Hariri* (Paris, 1821), accompanied with Arabic commentaries. Among the Arabic poems recently published, Kosegarten has given to the public the *Amrui ben Kelthum Moallaka* (Jena, 1819); Freitag, the *Carmen Caab ben sohair* (Bonn, 1822); Hengstenberg, the *Amriul Kaisi Moallaka* (Bonn, 1823); Horst, the *Carmen Motanabbii* (Bonn, 1823). The whole collection of Motanabbi has been translated, by Hammer, into German (Vienna, 1824). Among the historical works published are Rasmussen's *Additamenta ad Historiam Arabum* (Copenhagen, 1821); Freitag's *Selecta ex Historia Halebi* (Paris, 1819); Fraehn's *Ibn Foszlan* (Petersburg, 1823); Uylenbroek, *De Ibn Kaukalo* (Leyden, 1822); Hamaker's *Specimen Catalogi* (Leyden, 1820); Kosegarten, *De Mohammede ebn Batuta* (Jena, 1818); of the Arabian text of the Arabian Nights, two volumes have appeared in Calcutta (1818). Hammer and Hagen have given new German translations. The Arabian romance *Antar* has been translated into English (London, 1820). The most important numismatic works, of late, have been published by Fraehn, at Petersburg, Castiglioni at Milan, and Hallenberg at Upsal. (See *Arabian Language and Literature.*) For Hebrew, so nearly related to Arabic, Gesenius has done much by his dictionary; also for grammar, for instance, by his *Lehrgebäude der Hebräischen Sprache* (Leipsic, 1817). An excellent grammar has been written by professor Moses Stuart, of Andover (Mass.) Among the editions of Hebrew authors is to be mentioned Gesenius's *Isaiah* (Leipsic, 1821). In the rabbinical literature, the most recent works are, Winer's *Chrestomathia* (Leipsic, 1823), and Kosegarten's *Liber Coronæ Legis* (Jena, 1824), which contains fragments of an author of the sect of the Caraites. (See *Rabbinical Literature.*) Our knowledge of the Phœnician has been extended by Hamaker's *Monumenta Punica* (Leyden, 1822); and the history of the Phœnician, and of all other Semitic alphabets, has been illustrated by Kopp's *Bilder und Schriften der Vorzeit* (Manheim, 1819 to 1821). Gesenius's *Samaritanorum Theologia* (Halle, 1822), contains fragments of Samaritan hymns. A new Syrian Grammar has been published by Hoffmann (Halle, 1824). A new Syriac dictionary is a great desideratum; Quatremère, at Paris, has collected many materials for this purpose. We have an important work, remarkable also as a religious monument, in the Sabian, a dialect of the Syrian, in Norberg's *Codex Nasaræus* (Lund. 1815; with glossaries, 1816 and 1817). We have an apocryphal book of the Old Testament, in the Ethiopic, *Ascensio Jesaiæ Vatis*, Ethiopian and Latin, by Laurence (Oxford, 1819), and also the *Primus Esræ Liber*, Ethiopic and Latin, by the same (Oxford, 1820). Aucher has published a new Armenian Grammar and Dictionary (Venice, 1816 and 1817). The Armenian Translation of the Chronicle of Eusebius, and *Mémoires historiques et géographiques sur l'Arménie*, have also appeared at Paris (1819). In the Armenian convent at Venice, Armenian works are constantly publishing. The Asiatic society, at Paris, is publishing a grammar and vocabulary of the Georgian. Important fragments of the Coptic literature have been published in Zoega's *Catalogus Codicum Copticorum* (Rome, 1810). Doctor Young and Champollion occupied themselves in deciphering ancient Egyptian writings. See the Account of the former, and the *Précis du Système Hiéroglyphique* of the latter; see, also, our article *Hieroglyphics.*

ORIFLAMME (*auriflamme*); the old royal standard of France, originally the church banner of the abbey of St Denis, which was presented by the abbot to the lord protector of the convent (formerly the counts of Vexin and Pontoise), whenever it was necessary to take up arms for the preservation of its rights and possessions. It was a piece of red taffeta (thence the name) fixed on a golden spear, in the form of a banner, and cut into three points, each of which was adorned with a tassel of green silk. When Philip I. afterwards united Vexin to the possessions of the crown, it fell to him to bear the banner as protector of the abbey. It was now carried with the armies, and eventually became the great standard of the kingdom. Since the time of Charles VII. it has never been carried into battle. See Lanzelot, *Mémoires de l'Académie des Inscriptions*, viii.

ORIGEN, one of the most learned ecclesiastical writers, surnamed, from his untiring diligence, *Adamantius*, was born at Alexandria, A. D. 185, and early instructed by his father in the Christian religion and the sciences. His teachers afterwards were Clement of Alexandria and Ammonius. In his early youth, he gave proofs of greatness of soul. When his father was thrown into prison on account of his religion, under the emperor Severus, Origen exhorted him to suffer martyrdom rather than renounce Christianity. After the death of his father, he maintained his mother and sister by giving instructions in grammar. At the age of eighteen, he was appointed to instruct the believers in Alexandria. Males and females crowded to his lectures. To escape calumny, he determined to mutilate himself; and he thought the act was justified by a passage in the New Testament. After the death of Septimius Severus in 211, Origen went to Rome, where he gained friends and admirers. After his return, agreeably to the desire of the bishop Demetrius, he continued his instructions at Alexandria. A popular tumult compelled him to flee to Palestine. He was so highly esteemed by the bishops there, that they permitted him to preach in their assemblies. His own bishop, moved with jealousy, recalled him. He was soon after invited to Achaia, which was distracted by various heresies. On his way to Cæsarea, in Palestine, he was consecrated to the office of presbyter by the bishops who were there assembled. This laid the foundation for the persecutions which imbittered the remainder of his life. Demetrius maintained that it belonged only to himself to consecrate Origen. He summoned two councils, deprived Origen of his priestly office, prohibited him from teaching in Alexandria, whither he had returned, compelled him to leave the city, and excommunicated him. This sentence was confirmed at Rome and by most of the other bishops. But the churches of Palestine, Arabia, Phœnicia, and Achaia maintained a connexion with Origen, who denied the errors of which he was accused, and went back again to Cæsarea. Theochristus, the bishop there, received him as his teacher, and intrusted to him the duty of explaining the Holy Scriptures. In the year 231, his persecutor died, and Origen now enjoyed in tranquillity his well deserved fame. Gregory Thaumaturgus and his brother Athenodorus employed him as their instructer. The persecution of the Christians, under Maximin, forced him to remain for two years in concealment. When peace was restored to the church, by Gordian, in 237, Origen took advantage of it to travel to Athens. He then went to Arabia, to which the bishops of this province had invited him, to refute bishop Beryllus, who affirmed that the divine nature of Christ did not exist before his human nature. Origen spoke with such eloquence that Beryllus recanted, and thanked him for his instructions. The same bishops called him to a council which they held against certain heretics who maintained that death was common to soul and body. Origen spoke on this subject likewise with such power, that he gained them all over to his own opinions. In a new persecution, under the emperor Decius, Origen was viewed as a pillar of the church, was thrown into prison, and subjected to the most cruel sufferings. Exhausted by this severity, he died at Tyre in the year 254.

Few authors have written so much as Origen: few men have been so much esteemed and admired, and yet attacked with such virulence, and persecuted with such severity, both during his life and after his death. He was reproached with having attempted to blend the Christian doctrines with the notions of Plato. Particularly in his book *De Principiis*, directed against heretics, and now extant only in the fragments of a translation by Rufinus, he presents a system founded on the Platonic philosophy; but he gives his opinions only as a possibility; moreover, the heretics of his own time, as he says himself, corrupted his writings. He has been accused, without reason, of favouring materialism. He expressly opposes those who consider God as having a corporeal nature. Of his works (represented to be 600), with the exception of the one just mentioned, there are extant only his Exhortation to Martyrdom, commentaries, homilies, and scholia on the Holy Scriptures, of which he may have intended to explain the whole. We still have a large number of them; but they are, in general, nothing more than free translations. He made a general application of the figurative or allegorical explanations of the Jews, and rejected the literal meaning, which he regarded as the mere external part of the former. Besides these exegetical works, he distinguished himself by his critical talent in his *Hexapla*, of which an edition was published by Montfaucon, and afterwards by Chr. Fr. Bahrdt. His work against Celsus is considered as the most complete and convincing defence of Christianity which antiquity can boast. His works, complete in four volumes folio, were published by De la Rue (Paris, 1733—59). There has been much contention about the orthodoxy of Origen. In the fourth century, the Arians appealed to his authority to confirm the truth of their doctrines. The most learned and the most celebrated fathers have been found both among his friends and opponents.

ORIGINAL. See *Deer*.

ORILLON, in fortification, is a small rounding of earth faced with a wall, raised on the shoulders of those bastions that have casements, to cover the cannon in the retired flank, and prevent their being dismounted by the enemy.

ORINOCO, or ORONOKO; a river of South America, one of the largest in the world. Its source has not been ascertained with certainty, but, according to La Cruz, it rises from the small lake Ipava, in lat. 5° 5′ N. It has a very circuitous course of upwards (including its windings) of 1500 miles, and flows into the Atlantic, opposite to the island of Trinidad, by about fifty mouths, seven of which are navigable. The principal mouth, six leagues wide, is south-east of Trinidad, in lon. 59° 50′ W., lat. 8° 30′ N. The Orinoco is connected with the Amazon by the Rio Negro and Cassiquiari, and receives the waters of many large rivers, among which are the Meta, Apure, Arauaa, Caura, and Caroni. At the distance of 200 leagues from the ocean, it is from 2500 to 3000 fathoms wide; and at St Thomas, 3850 fathoms; and, in March, when the waters are lowest, it is 65 fathoms deep. During the rainy season, it inundates the immense plains through which it flows, the inundation extending, during the highest floods, from eighty to ninety miles on each side, presenting to the eye a boundless expanse of waters. On the banks of the Orinoco the magnificence of the scenery is beyond description. Forests of the greatest extent are filled with aromatic trees, which diffuse the most delightful odour; birds of the most various and beautiful plumage abound, and hordes of monkeys follow the astonished traveller. Passing these forests, enormous plains extend their verdant surfaces farther than the eye can reach, and the cataracts of the Orinoco give their name to the whole Cordillera, and are represented as the most tremendous that have ever been observed; but no good description of these falls has yet been given, though they constitute the only outlets from the country situated east of the Andes, to the vast plains of the Amazon.

ORIOLE (*icterus*, Briss.). The beautiful birds, designated under this name are well known, in all parts of the United States of America, by the richness of their plumage and the peculiar form of their nests. They are exclusively found in America, inhabiting the United States during the summer, and wintering farther south. The female differs widely from the male in brilliancy of colour and in size. The young resembles the female very closely. They usually moult but once a year, but the colours are more vivid in the spring, the plumage of the male, in winter, being somewhat like that of the female. They build in trees, fly well, and walk quick, holding the body almost erect.

The species inhabiting the United States are *I. Baltimore* (see *Baltimore Bird*); *I. spurius;* male bird chestnut; head, neck, wings, and tail black; female and young olive green; beneath yellow; wings and tail dusky. This species is commonly known under the name of *orchard bird*. It inhabits all parts of the Union in summer, and is far from being uncommon. *I. phœniceus*, or red-winged blackbird; this bird, so well known for his predatory habits, is found in all parts of the United States in large flocks. The male is black, with the lesser wing-coverts of a brilliant red; female blackish, varied with whitish. *I. xanthocephalus*, yellow-headed troopial, found in the Western territory and Mexico. It is black, with the head, neck, and breast yellow orange, and a white spot on the wing. The female is a dark brown; throat whitish, and a round yellow patch on the breast. *I. pecoris*, or cow-bird; a well-known species, inhabiting the Northern States during the summer, and wintering to the southward. These are the only birds that, like the cuckoo, deposit their eggs in the nests of other species: they also resemble the European starling, in following cattle and alighting on their backs. The male is glossy black, with the head and neck of a deep silky drab. The female is sooty brown, paler beneath. *I. agripennis;* reed bird or rice bird.

ORION; a hero of ancient mythology. He is commonly called the son of Neptune and of Berylla. According to Homer, he was a beautiful youth, of whose charms Aurora became enamoured. The gods were jealous of her love, and Diana slew him with her arrows, in the island of Ortygia. According to other writers, he was a king and a great hunter, and, as Homer says, continued, even in the lower world, to hunt in a large meadow the animals he had killed upon earth. He was of such gigantic size, that when standing in the middle of the sea, the water only reached his shoulders. His eyes were put out by Œnopion, whose daughter he had attempted to carry away. The oracle, which he consulted, advised him to stand in the sea, exposed to the rays of the sun, until he should regain his sight. He died of the sting of a scorpion. Others say that Diana loved Orion so passionately that she wished him for her husband. This condescension so offended her brother Apollo, that he resolved on the death of the insolent mortal. When Orion, therefore, went into the sea, and his head alone was visible, Apollo asked Diana to try whether she could hit with her arrows that dark spot visible above the waters. The goddess shot the fatal arrow, which pierced the head of her lover. She was unconscious of her mistake, until the waves bore his body to the shore. The hero, after his death, was placed, with his hounds, as a constellation, in the heavens. It is the brightest in the northern hemisphere, and still bears his name. See *Constellations.*

ORISSA; a province of Hindoostan, belonging to the presidency of Bengal, lying in the eastern part of the peninsula, with the province of Bengal on the north, the Northern Circars on the south, the bay of Bengal on the east, and Gundwana on the west. The length is probably about 500 miles, and the breadth 100; but it has never been entirely explored. The western part is an almost impassable wilderness of thick woods and jungles, and rugged hills, infested by leopards and other beasts of prey. A great part of the province is extremely unhealthy. It has a population of about 1,200,000 Hindoos, of different tribes, and Mohammedans. The Moguls conquered it in the beginning of the seventeenth century, and parts of the province afterwards fell into the hands of the Nizam and the Mahrattas. The British acquired possession of it in 1803. See *Mahrattas* and *Hindoostan.*

ORKNEY ISLANDS, or ORCADES; a group of small islands on the northern coast of Scotland, (from which they are separated by the strait of the sea called the Pentland Firth, here about ten miles wide) forming the southern division of the shire of Orkney and Shetland. They are included between lat. 58° 44′ and 59° 25′ N., and lon. 19′ E. and 17′ W., being irregularly scattered over a space of about fifty miles in length by thirty in breadth. Their number, including the uninhabited islets or *holms*, is about sixty-seven; of these, twenty-nine are inhabited. The *skerries* are bare rocks, which are overflowed at high water. Among the principal islands are, Pomono, or Mainland of Orkney, by far the largest of the group; Hoy, North and South Ronaldshay, Sanda, Stronsay, Westray, Eday, Ronsay, Egilshay, Shapinshay, and Walls. The isle of Mainland forms a district containing the parishes of St Andrew's, Birsay, Dearness, Evie, Firth, Harray, Holm, and Paplay united, St Ola, Orphir with Cava island, Rendall, Sandwich, Stenness, and Stromness; with the royal burgh of Kirkwall (population 3065) and the burgh of barony Stromness. The other districts are those of the North Isles and the South Isles. The former includes the islands of Eday and Pharay, Egilshay, Enhallow, Gairsay, North Ronaldshay, Rousay, Shapinshay, Sanda, in which are the parishes of Burness, Cross and Lady; Stronsay, in which are the parishes of Lady-Kirk, St Peter's, including Papa-Stronsay island and St Nicholas; Westray, in which are the parishes of North or Lady-Kirk, East and West; Papa-Westray, and Wier. The district of South Isles includes the islands of Burray, Copinshay, Flotta, South Faira, Græmsay, and Hoy, which last two form the parish of Hoy; Walls Island, divided into the parishes of North Walls and South Walls; South Ronaldshay, including the parishes of St Peter's, or North Kirk, and Lady or South Kirk; Swannay, and Pentland Skerries. Besides these there are a number of islets or holms, which are uninhabited, but many of them afford good pasture for sheep.

The face of the country in the Orkneys is low, presenting, in general, a surface of heath, or coarse pastures, interspersed with spots of cultivated land, destitute of trees, or even of tall shrubs, except in a few gardens. There are some spacious and secure harbours on the coasts. Wild fowl are numerous; the heaths abound with red grouse, plovers, and snipe; eagles, wild ducks and geese, solan geese or gannets, swans, &c. are numerous. The skerries swarm with seals; sea otters, whales, cod, grampuses, oysters, &c., are found. Large seeds are often thrown ashore, which are called *Orkney beans;* they are carried thither from America by the gulf stream. The climate is variable. In summer it is light enough to read at midnight, and in midwinter the sun is only four hours above the horizon; but the northern lights are frequent and splendid. The language spoken in the Orkneys is English, intermixed with Danish or Islandic words and idioms, and with but little of the Scottish pronunciation or phraseology. The lower classes of the people were formerly much addicted to superstition, placing great confidence in dreams, charms, and omens; and believing in the existence of lucky and unlucky days, on the latter of which they carefully avoided going to sea, or commencing any new undertaking. But these vulgar errors have in a great measure been abandoned of late years; and the inhabitants in general do not yield in intelligence and sagacity to those of any other part of the British empire.

The early accounts of these islands are involved in many fables. They are first described by the geographer *Melas,* whose account is very inaccurate: Pliny the elder also mentions them, and states their number at about forty. They are afterwards described by Solinus, the supposed cotemporary of Agricola; who states, that in his time they had not a single inhabitant, and were overgrown with rushy grass: his accounts are by no means to be depended on; and, upon the whole, it seems generally to be allowed, that Julius Agricola, the Roman general in Britain, was the first Roman who landed on the *Orcades,* till then unknown, except by report, and subdued them. After that period, however, we know little about them. It is probable that the Picts possessed these islands until the subversion of the Pictish kingdom in Scotland by Kenneth II. They continued annexed to the Scottish monarchy until 1099, when they were assigned by king Donald Bane to the king of Norway, for the assistance which Donald had received from that king in his usurpation. They remained in possession of the Norwegians until the middle of the 13th century, when Magnus king of Norway transferred them to Alexander king of Scotland, who gave the property thereof to a nobleman sirnamed *Spiere,* an heiress of whose family brought it to the *Sinclairs* or *St Clairs,* one of whom was created prince of Orkney and duke of Oldenburgh, upon his marriage with a daughter of the king of Denmark. One of his successors having forfeited, the title and estate fell to the crown; but the islands were of small advantage to the Scots, being often disturbed in their possession by the Norwegians, who again asserted their right of sovereignty, and often possessed them, until the year 1470, when James III. of Scotland married Margaret, daughter of the king of Norway, with whom they again passed to the crown of Scotland in lieu of dowry; and, upon the birth of her son, they were finally ceded. Notwithstanding this, however, the Danes still continued to advance claims upon the islands till the marriage of James VI. with the princess Anne of Denmark, when the Danish government ultimately abandoned all their former pretensions. The superiority of the Orkneys was dismembered from the crown by the union parliament, and granted for a certain annual consideration to the earl of Morton, whom queen Anne also appointed hereditary steward and justiciary. When heritable jurisdictions were abolished in 1748, the appointment of the stewardship reverted to the crown; but the earl of Morton possessing the patronage of the stewartry, he long retained the posts of steward and sheriff. The superiority was afterwards purchased from the earl by Sir Lawrence Dundas for £60,000, and it still continues in the family of his descendant, lord Dundas. Population of the Orkneys in 1821, 27,179.

ORLANDO FURIOSO. See *Ariosto.*

ORLANDO INNAMORATO. See *Boiardo.*

ORLEANAIS; before the revolution, a fertile province of France. The Loire passes through and divides it. Orleans, which gave name to the province, was the capital. The forest of Orleans, in this province, contains 94,000 acres.

ORLEANS; a city of France, lying on the Loire; previous to the French revolution, capital of the government of Orleanais, at present, capital of the department of the Loiret, with a population (1827) of 40,340; lat. 47° 54′ N.; lon. 1° 55′ E.; seventy-five miles south-west of Paris. The houses are well built, but the streets in general are narrow and crooked. It has four handsome public squares, a Gothic cathedral, a Hotel-de-ville, the Chatelet, a splendid bridge over the Loire, of sixteen arches, and other edifices worthy of notice. The manufactures and trade of the place are still considerable, but have much declined. Philip of Valois erected it into a duchy and peerage in favour of his son, and Orleans has since continued to give the title of *duke* to a prince of the blood-royal. Charles VI. conferred it on his younger brother, who became the founder of the Valois-Orleans line. This line having become extinct, the title was borne by the third son of Henry IV., Gaston, who left no male heirs. Louis XIV. conferred it on his brother, the founder of the present line of Bourbon-Orleans. (*See the succeeding article.*) Philip the Fair instituted a university here in 1312, which formerly had great celebrity. In 1428, the city sustained a siege against the English, and was relieved by the Maid of Orleans (see *Joan of Arc*), whose statue, in bronze, stands in one of the public squares.

ORLEANS. Two houses of this name have occupied the throne of France.

1. On the death of Charles VIII. without issue, in 1498, Louis, duke of Orleans, great grandson of their common ancestor Charles V., and grandson of the first duke of Orleans, being the nearest heir, ascended the throne under the title of *Louis XII.* Henry III. (died 1589) was the last sovereign of this house, or the *Valois-Orleans* branch. See *France*, division *Statistics.*

2. The reigning house, or that of *Bourbon-Orleans*, is descended from Philip, duke of Orleans, son of Louis XIII., and younger brother of Louis XIV. His son Philip II., duke of Orleans, was regent of France during the minority of Louis XV. His grandson, Louis Joseph Philip, who distinguished himself during the French revolution of the eighteenth century, married Louisa, daughter of the duke of Penthiévre (son of the count of Toulouse, a natural son of Louis XIV.), and was beheaded in 1793. (See *these articles.*) His only surviving son is Louis Philip I., king of the French.

ORLEANS, Gaston Jean Baptiste de France, duke of; third son of Henry IV. and Mary of Medici, born 1608, was involved, without glory, and without success, in all the troubles that agitated the reign of Louis XIII. and the minority of Louis XIV., four times quitted the kingdom, and four times returned with arms in his hands. His early education was miserable, and was the cause of the feebleness of character which he displayed through life although he had received from nature much more of his father's spirit than Louis XIV. The jealousy which the latter, particularly before his wife, Ann of Austria, had borne him children, entertained of his brother, was the first cause of that difference between them, which the duke's vindictive temper never allowed to be permanently healed. By his first marriage, with Mary of Bourbon, heiress of the house of Montpensier, he had a daughter, the author of some interesting Memoirs. (See *Montpensier)* To divert the duke from a second marriage, which the jealous king feared, and which even Richelieu esteemed hazardous, no efforts were spared to gratify his passion for play, and for the arts. He continued this life of dissipation until, in the dispute between the queen mother and cardinal Richelieu, he took part against the court. This dispute resulted in the triumph of the cardinal. (See *Richelieu*, and *Louis XIII.*) The duke of Orleans was also obliged to submit, and in his political conduct and life now displayed that singular vacillation which led the cardinal de Retz to say of him, that he engaged in every thing because he wanted firmness to refuse those who led him, and that he always came off with disgrace because he wanted courage to persevere. When the duke—who, at one moment, full of defiance, took arms against the court, and united himself with the enemies of his brother, and at another, full of humility, submitted to the king and the cardinal—sued for the hand of Mary, daughter of the duke of Lorraine, new disputes broke out between him and the king. The marriage was secretly concluded, and was not made known until two years afterwards to the king, who, by a decree of the parliament of Paris, had it declared null. This decision gave rise to a war of pens between the jurists and the theologians. The duke continued to take a part in all the troubles, and the validity of his marriage was not acknowledged until after the death of Louis XIII. During the disturbances of the Fronde, the vacillating enemy of Richelieu could not be a steady friend of Mazarin. He joined the coadjutor De Retz, the soul of the Fronde, who soon saw through the character of his fickle and feeble confederate. After the termination of the troubles (1648), the duke was banished to Blois, where he died in 1660. See the *Mémoires* of his daughter, above-mentioned.

ORLEANS, Philip, duke of, only brother of Louis XIV., and founder of the house of Bourbon-Orleans, now on the throne of France, was born in 1640. Mazarin, who superintended the education of the two princes, had adopted the plan of the Eastern courts, to render one of them manly and the other effeminate. "Why," said he to Lamathe le Vayer, the tutor of Philip, "why do you wish to make the king's brother an able man? If he is more learned than the king, he will no longer know what blind obedience is." While Louis was early accustomed to play the king, his mother used to show the delicate Philip to the courtiers in petticoats. In his twenty-first year, he married Henrietta of England, sister of Charles II. The great esteem which the king showed for this princess excited the jealousy of of his brother. Soon after her return from England, whither the king had sent her to detach her brother from the triple alliance, she died suddenly, and her death was attributed to poison, to the administration of which the duke was suspected of being accessory. His jealousy seems not to have been unfounded, according to the accounts contained in the letters of his second wife, Elizabeth Charlotte, in which the charge of his being an accomplice in the poisoning is repelled. See the *Mémoires sur la Cour de Louis XIV. et la Régence;* extracted from her correspondence (Paris, 1822). The second marriage of the duke, with the princess Elizabeth (1671), was arranged by Louis, to secure the neutrality of the elector palatine, in the approaching war against Holland. In this war the duke distinguished himself, and the soldiers said of him that he was more afraid of the sun than of powder and ball. But the feebleness of his character displayed itself in all his tastes. Dress, masquerades, court pageants, were his great delights; and his wife, in the *Mémoires* above-mentioned, relates some amusing stories of his superstition. He died in 1701.

ORLEANS, Philip, duke of (not to be confounded with the regent duke of Orleans, afterwards Louis XII.), son of the preceding, was born in 1674. As regent of France during the minority of Louis XV. (1715—23), notwithstanding his talents and naturally good disposition, he paved the way for the revolution by his personal character, no less than by that of his administration, by the shameless profligacy of his court, and the public bankruptcy, which was the consequence of the financial schemes of Law. The duke of Orleans (known, till the death of his father, in 1701, as the duke of Chartres) united wit and eloquence with grace and amiable manners; his intelligence and good memory had enabled him to make considerable acquisitions without much effort. From Henry IV., whom he aimed to resemble, he inherited a confiding and happy temper, a simplicity and goodness of heart, a readiness to forget injuries, and the qualities of a warrior; but he wanted energy and strength of mind. Dubois, his tutor, became his guide. His precepts and example contributed to corrupt the young prince (see *Dubois*), and, by administering to his vanity and his pleasures, he soon acquired a great ascendency over his pupil. The prince was prevailed upon, through the influence of Dubois, and in opposition to the wishes of his mother) to comply with the desire of Louis XIV. in marrying Mlle. de Blois, the legitimated daughter of the king. By this marriage, which was not happy, he had three daughters and one son. The duke neglected his wife, who was proud and cold, and, when reproved by the king for his excesses, indulged in a course of secret debauchery. Among his dissolute companions (whom he called his *roués*), and in the society of prostitutes, he ridiculed all notions of morality and the superstitions of the aged king. (See *Louis XIV.*) In 1692, the prince served his first campaign, under marshal Luxembourg, in the Netherlands. In the war of the Spanish succession, he received a command in Italy; but his opinion was slighted, and Italy was lost. The king then placed him at the head of a corps under marshal Berwick, in Spain; but he thought himself not properly supported, and was also offended by the refusal to make his mistress lady of honour to the queen. When the fall of the feeble Philip V., in Spain, appeared probable, the duke formed the plan of raising himself to the Spanish throne; but his scheme was betrayed and his accomplices arrested. It was even made a subject of deliberation at Versailles, whether a process should be instituted against him. His enemies accused him of a design to excite the soldiers of Philip against their king, and the dauphin demanded his execution; madame de Maintenon also held him guilty; but the chancellor and the virtuous duke of Burgundy, son of the dauphin, defended him so strongly, that he was permitted to justify himself. The duke, from this time, devoted himself to the study of chemistry, with a certain Homberg, and in 1711 and 1712, the dauphin, the duke of Burgundy, his wife, and his eldest son, dying suddenly, one after another, the public voice openly accused the duke of having poisoned them. Only two members of the dauphin's family now survived—the duke of Berry, son-in-law of the duke of Orleans, and the duke of Anjou (afterwards Louis XV.), who, as two ladies of the court pretended, was saved only by an antidote. The duke was exposed to great danger from popular violence, and was shunned at court, although the king appeared to be convinced of his innocence. At this time, Louis signed an edict making his natural sons, the duke of Maine and the count of Toulouse, capable of the succession, and, in his will, named a council of regency, in which the duke of Orleans was to preside, but to have no other privilege except that of a casting vote. But the duke had already ceased to be unpopular; the military, the noblesse, and the parliament were favourable to him, and, twenty-four hours after the death of the king (September 2, 1715), measures were taken for declaring his will null; and the duke of Orleans thus became sole regent, as first prince of the blood. The new regent promised to administer the government on a plan found among the papers of the duke of Burgundy, and was conducted to his palace amidst the rejoicings of the people. The different councils were filled with his friends, and the abbé Dubois, who was commonly known by the name of the *abbé Friponneau*, was made a counsellor of state; on which occasion the regent said to him, "A little honesty, abbé, I beg of you." Dubois soon had an opportunity to render himself serviceable. Since the peace of Utrecht, France had stood alone. The measures of the regent raised the suspicions of the king of England. The Dutch had still less confidence in the French policy, and inclined more to the Austrian court, which was by no means on good terms with France; and with Spain the duke was involved in personal hostility. An alliance with Britain could alone render him secure; and Dubois not only effected this, but also the accession of the states-general, the consequence of which was the celebrated triple alliance concluded at the Hague (January 4, 1717), which baffled the plans of Alberoni, and entirely divided the Spanish and French houses of Bourbon in their political course. Notwithstanding this, that subtle politician, who had been made minister of foreign affairs, afterwards concluded a double alliance between the French and Spanish courts, by the marriage of Louis XV. with an Infanta, and of the prince of the Asturias with the princess of Chartres. The fatal consequences of Law's scheme were owing to the manner in which it was executed, and to the inconsiderateness of the regent, who expected to obtain, by means of it, a mine of gold for his mistresses and favourites. He endeavoured, without success, to raise the bank notes and public paper to their nominal value, by a depreciation of the value of the metals, and finally issued the tyrannical edict (February 24, 1720) that no person should have in his possession more than 500 livres in silver, coined or uncoined, under the penalty of 10,000 livres. All credit immediately disappeared, and the first seeds of the revolution were sown. The regent, who hated all exertion, left the ministers to conduct affairs at their own pleasure, and the politics of his court became very vacillating. He obliged the legitimated sons of Louis XIV. to renounce their claims to the succession, and the privilege of styling themselves princes of the blood. To revenge this act of violence, the duchess of Maine entered into a conspiracy with the Spanish minister Cellamare to displace the regent. The duke pardoned her, but some of her accomplices perished on the scaffold. De Mesmes, president of the parliament, protested to the regent his innocence of any participation in the plot; but the latter proved his guilt, and pardoned him. In other respects, justice was strictly and impartially administered. A count Horn was condemned to be broken alive for the murder of a banker. The family and the courtiers represented to the regent, that the count was connected with the most illustrious families, and even with himself. "Gentlemen," replied the prince, "the shame is in the crime, not in the punishment; and as for myself, I will bear my part of the disgrace." In 1723, he finally resigned the government into the hands of the young king, whom he had gradually made acquainted with affairs in an unrestrained manner, and gave himself up to the wildest excesses. Yet, after the death of Dubois (August, 1723), he took upon himself the duties of premier, and would allow his favourite *roués* no share in affairs; and it is remarkable, that, even in his orgies, no state secret ever escaped him. He died in December, 1723, of apoplexy, the consequence of his excesses, at the age of forty-nine.—For an account of the regent and the regency, see Marmontel's *Régence du Duc d'Orléans* (Paris, 1805); St Simon's *Mémoires;* and particularly Sevelinges's *Mémoires secrets et Correspondance inédite du Cardinal Dubois* (Paris, 1815).

ORLEANS, Louis Joseph Philip, duke of, great grandson of the preceding, was born in 1747, and until the death of his father, in 1787, bore the title of *duke of Chartres*. During the revolution he acquired an unfortunate notoriety, and, even in his youth, was distinguished for his unbridled licentiousness. His wife, Louisa Mary Adelaide de Penthièvre (born 1753), whom he married in 1769, inherited the virtues and piety of her father, the duke of Penthièvre. The duke of Chartres was accused of having seduced her brother, the prince of Lamballe, to participate in his excesses, for the purpose of ruining his constitution and inheriting his estate. This marriage was only a source of unhappiness to the duchess, who turned all her thoughts to the education of her sons, of whom the only survivor, Louis Philip, now occupies the throne of France. Nature had done much for the duke of Orleans, fortune yet more; he was immensely rich: his person was rather above the common stature, and his countenance was pleasing, until his debaucheries had disfigured it with eruptions. He was dexterous and active in bodily exercises, not without intelligence, but ignorant and credulous; a good-natured, weak man, without any decision of character. After having indulged to satiety in all sensual pleasures, he found a new kind of excitement for his palled appetites in the storms of the revolution, and a new source of pleasure in the gratifications of revenge. His public life was entirely the work of circumstances. Entitled by his birth to the place of grand-admiral, he commanded a division of the fleet against Keppel, in the action off Ushant, in 1778; but his division was not brought forward: the duke was accused of cowardice, and, instead of being created grand-admiral, he was made colonel-general of hussars. From this time may be dated his hatred of Louis XVI. Several years later, he was chosen grand-master of the free-masons in France; and, in 1788, on the beginning of the disputes between the court and the parliament, he embraced the popular cause, and opposed the king in the *séance-royale* of November 19, on which account he was banished, but treated with marks of honour by the people. He then purchased large quantities of corn, for the purpose of supplying the poor gratuitously or at low prices, and, in 1788 and 1789, caused warm rooms to be prepared, into which the destitute were received and fed.

Having been nominated to the states-general as deputy of the noblesse of Crespi, in Valois, he espoused the cause of the third estate. Want of courage, only, prevented him from appearing at the head of the populace. On the 12th of July, 1789, he appeared among the crowd in the garden of the *palais royal;* but his courage failed him, and he soon withdrew into his palace. His adherents now used him merely for their own purposes, and flattered his ambitious hopes so long as he was necessary to them. He caused scandalous libels against the queen, whom he pursued with the most bitter hatred, to be distributed; and his bust was carried in triumph through the streets by the populace. The attempts of the 5th and 6th October, of which he is considered the instigator, were but partially successful. Lafayette threatened him with a legal investigation, and the terrified prince obtained permission of the king to retire to England. He returned in eight months, took the civic oath, and was acquitted by the assembly of the charges brought against him. On the flight of the king, he declared that he should decline the regency in case it were offered to him. An attempt was made at this time to reconcile him to the court, and the negotiations had taken a favourable turn; but the courtiers, who knew nothing of the matter, treated him with the most insulting contempt, on his appearance at court, in January, 1792, and even spit upon him as he went down stairs; and he was thenceforward the irreconcilable enemy of the king and queen.

The 20th of June and the 10th of August (1792) must have convinced the duke that a stronger party than his own had now acquired the ascendancy. He was returned to the national convention as member for Paris, with Marat, Robespierre, and Danton, and, in September, 1792, he assumed the name of *Egalité*, and, in December, declared, through the press, his renunciation of his right of succession to the throne. On the trial of the king, he voted for his death, and was present at the execution. The Jacobins, who had no longer any occasion for him, now abandoned him: he was struck from their rolls, and included in the general proscription of the Bourbons. He was imprisoned at Marseilles, but was afterwards transferred to Paris, and condemned to death by the revolutionary tribunal for a conspiracy against the republic. He heard his sentence with calmness, and died with firmness on the same day (November 6, 1793). His wife, who returned to Paris after the restoration, died there in 1821.

ORLEANS, Maid of. See *Joan of Arc*.

ORLEANS, New. See *New Orleans*.

ORLEANS TERRITORY. See *Louisiana*.

ORLOFF; a Russian noble family. — *Gregory Orloff* was one of five brothers, who lived a dissipated life. After his fortune was ruined, he supported himself by gambling and other arts. He served in the seven years' war, and, when count Schwerin was taken prisoner, carried him to Petersburg. The grand-princess Catharine, who had just lost her favourite Poniatowski, fell in love with him. He and his brothers assisted her much in the revolution, by which she was declared empress, and her husband, the emperor Peter III., deprived of life. Orloff soon attained the highest dignities; was allowed to wear the picture of the empress in his button-hole; and became enormously rich. But Orloff was rude and inconsiderate, so that, after some time, the empress wished to rid herself of him. He was sent to Moscow to take measures against the plague, and, when he returned, was represented on a medal and triumphal arch in the character of Curtius. He was then sent to Fockschani, in Walachia, to attend a conference with the Turks, whom, however, he offended by his overbearing character; and the object of the meeting was lost. The empress now sent him into a sort of banishment, ordering him to remain at one of her castles, to be chosen by himself. He went to Zarskoe-Selo. In 1772, however, she became reconciled to him. She gave him a magnificent palace, and he gave her, in return, the celebrated diamond. He now travelled, married, and seemed to live happily. Potemkin, at this time, had become the lover of the empress. Orloff died in 1783, after having been for some time subject to periodical attacks of insanity.—*Alexis*, his brother, showed, during the revolution in 1762, great courage. Disguised as a coachman, he drove the empress from Peterhoff in a mean carriage. He was one of the murderers of Peter III; rose soon to high dignities in the army; and, in 1768, was made admiral of the Russian fleet in the Archipelago, with unlimited power, against the Turks, whom he defeated off Tschesme; for which exploit he was called *Tschesmenskoi*. He was yet in the fleet when his brother lost the favour of the empress. In Leghorn, he deceived the daughter of Elizabeth, and had her carried to Petersburg. When he returned, he was brilliantly received. When Paul I. ascended the throne, he and Baratinski, the only survivors of the reputed murderers of Peter III., were obliged to attend the removal of the body of the murdered emperor from the convent of Alexander Newski to the fortress, during which ceremony they had to bear the corners of the pall. He remained ever after in disgrace, and died in 1808.

ORLOFF, Gregory, count of, Russian senator, privy-counsellor and chamberlain, who distinguished himself in the sciences, was born in 1777, and was elevated to the senatorship in 1812. He was a member of many academies and learned societies, and died in 1826, at Petersburg. His chief works are *Mémoires historiques, politiques et littéraires sur le Royaume de Naples*, &c., with notes by Duval (2 ed., 5 vols., Paris, 1825,) translated into German, English, and Italian, and embracing the history of Lower Italy from the earliest times until 1820; *Histoire des Arts en Italie*, the two first volumes of which treat of music, the others of painting; *Voyage dans une Partie de la France, ou Lettres descriptives et historiques* (Paris, 1824.)

ORLOP; a platform of planks laid over the beams in the hold of a ship of war, whereon the cables are usually coiled. It also contains the sail-rooms, the purser's, surgeon's, boatswain's and carpenter's cabins, and the several officers' store-rooms. In three-decked ships, the second and lowest decks are sometimes called *orlops*.

ORMOND, Duke of. See *Butler, James*.

ORMUZD is one of the spirits mentioned in the Zendavesta. He is subordinate to the Zeroene Akerene (infinite and uncreated time,) from whom he receives his power. He is the first-born of all beings, produced by the mixture of original fire and water, infinite, immortal, incorruptible. He was represented as the king of the world, and sitting in the midst of heaven, upon a high throne, "the throne of the good and the perfect," surrounded by celestial spirits and the souls of the happy. He was called the *eternal source of sunshine and light*: the sun and moon received their brightness from him. He carried, as a badge, upon his hand a ring, the symbol of his supreme power, and is sometimes represented as crowned with rays. He is also described as a venerable old man, resting upon the primeval bull, the emblem of the whole organic creation.

ORNE; a department of France. See *Department*.

ORNITHOLOGY is that branch of natural science which treats of the feathered tribe, or, to use the definition of Cuvier, of vertebrated oviparous animals, with a double circulation and respiration, organised for flight. The symmetry and beauty displayed in the graceful forms and varied colours of this part of creation, strike the most casual and inattentive observer; and the wonderful adaptation of their structure to their peculiar habits and modes of living, is a source of constant admiration to the student of nature. Almost every peculiarity in the external appearance of birds is fitted for the element they inhabit, and conducive to swiftness of motion. Every part of their frame is formed for lightness and buoyancy: their bodies are covered with a soft and delicate plumage, admirably calculated to protect them from cold or moisture; their wings, although of the lightest materials, are furnished with muscles of such power as to strike the air with great force, and to impel their bodies forward with astonishing rapidity, whilst the tail acts as a rudder, by which their course can be directed at pleasure. Their internal structure is in perfect consonance with those external peculiarities. Their lungs are fixed against the ribs, and enveloped with a membrane pierced with large holes, which permit the air to pass into cavities in the breast, abdomen, and even into the interior of the bones. This conformation not only renders them more buoyant, but also prevents any interruption in their respiration, by the rapidity of their motion through a resisting medium, and increases their vital energy. Some idea may be formed of the capacity of birds for respiration from the fact stated by Lavoisier, that two sparrows consume as much air as a Guinea pig. The anterior extremities of birds, being solely fitted for the action of flying, are useless either for resting or grasping; hence these animals are biped, and take objects from the ground with their mouth, for which purpose the neck and beak are elongated and very movable; the body is also inclined forward beyond the feet; the thighs are in advance, and the toes of such a length as to form a sufficient basis. The pelvis is very long, to give origin to muscles supporting the trunk on the thighs, and a set of muscles pass from the pelvis to the toes, so arranged that the simple weight of the bird retains the toes in a flexed condition; in consequence, they are able to sit perched upon one leg with security, and without becoming fatigued. The posterior parts of the pelvis (in common language known as the *side-bones)* are elongated and separated, to give room for the development of the eggs. The bill of all birds consists of two mandibles, the upper and lower, the former being generally fixed and immovable, though in the parrots it has the power of motion to assist them in climbing. None of the feathered tribe have teeth, but the horny case which covers the mandibles supplies the place of these instruments, and is sometimes serrated, so as to resemble them. In some birds, as the falcons, the base of the beak is covered with a skin called the *cere;* and in the turkey, the carrier-pigeon, &c., it is covered with a carneous appendage. The bill is in some kinds straight; in others curved upwards or downwards; in some flat; in others conic, wedge-shaped, or hooked, &c. It enables the bird to take hold of his food, to strip or divide it, to carry materials for building his nest, or food to his young, and is a formidable weapon in the rapacious tribe. The nostrils are usually of an oval form, and placed near the base of the beak. The eyes are so disposed as to distinguish equally well near and distant objects, and their sense of sight is exceedingly acute. The sparrow-hawk discerns small birds from an incredible distance. Besides the ordinary eyelids, there is a third, called the *nietitating* membrane, which is translucent, and defends the eye of the bird from the direct rays of the sun, without obstructing the sight. Birds have no external ear, with the exception of the nocturnal tribes; these have a large exterior conch, in the form of a thin leathery piece of flesh. The internal ear, however, is very large, and their sense of hearing very quick. The brain of birds is distinguished by its great proportionate size, and appears to be formed of tubercles, and not of convolutions. Their digestive powers are very great: the stomach is composed of three parts —the *crop*, which is a thin membranous expansion; the *succenturium*, also a membranous pouch, furnished with a multitude of glands; and the *gizzard*, which is provided with two strong muscles, covered inside by a velvet-like cartilage; here the food is ground, or triturated, and its action is aided by the presence of small stones, which birds swallow for that purpose. The coverings or feathers of birds are admirably calculated for security, warmth, and celerity of motion. They are of three kinds; down, smaller feathers, and quills (*floccæ, plumæ et pennæ*.) The feathers which invest the body have small shafts and large vanes, and are placed over each other like shingles, so as, at the same time, to permit the water to run off and to exclude the cold. The down is placed under these, and serves as a further protection against the cold: hence it is most abundant in those species that inhabit the polar regions. The quill feathers are principally found in the wings and tail. The vanes, which in the wing feathers are broad on one side and narrow on the other, consist of a number of small *laminæ*, which are connected by the interlacement of a multitude of minute bristles. The largest quill-feathers in the wing, or those nearest the extremity, are termed *primaries*; those which arise from the fore-arm are called *secondaries*; and the weaker feathers attached to the *humerus* are designated as *scapulars*. The quill-feathers of the tail are large and strong, having their vanes almost equal in size: they are generally twelve in number, but sometimes, especially in the gallinaceous birds, eighteen or twenty. The feathery covering of birds constitutes their peculiar beauty: on this, nature, particularly in the warmer climates, has lavished the most splendid colours. The size of the wings is not always in proportion to the bulk of the bird, but is accommodated to its manner of living. Accordingly, birds of prey, swallows, and, in general, such birds as are intended to hover a long time in the air, have much longer wings, in proportion to the size of their bodies, than quails, domestic hens, &c. In the ostrich, the cassowary, and the penguin, the primaries are wanting entirely. The flight of birds differs very much from that of bats, insects, and other volant animals. Many birds, as falcons, soar boldly above the clouds, whither no eye can follow them, and hover for many hours, without perceptible exertion, in the air. Likewise swallows, larks, and some other kinds of birds, sail to considerable distances with little effort; others, as sparrows, have a fluttering flight. Some, as the owls, fly without any noise; others, as the partridge, &c., with a loud whirr. The flight of a young bird resembles the tottering steps of an infant. You see distinctly how anxiously he seeks for the nearest resting-place, and how soon he is tired. The tail serves as a rudder in most birds; the long legs of the cranes and other waders appear to serve the same purpose. The legs in different genera of this class are so diversified in shape, that many naturalists have considered these differences sufficient for distinguishing marks of different orders. Being adapted either for resting upon trees, for swimming or running, they answer exactly to the wants of each species. From their food, manner of life, and locomotive powers, birds would seem destined to become inhabitants of every part of the globe; and, in fact, the cold and barren regions of the north and the sultry plains of the tropical climates, become the alternate residence of the same birds at different seasons of the year. At particular times in the year, most birds remove from one country to another, or from inland districts to the sea side. The periods of these migrations are observed with wonderful accuracy, though they are somewhat regulated by the temperature of the seasons. Some species, however, are stationary, as many of the birds of prey. (For a particular account of the migration of birds, see the article *Migration of Animals*.) The food of birds, like that of quadrupeds, is derived from the animal and vegetable kingdoms, and, like them, they may be divided into the granivorous and carnivorous, and some which hold a middle rank; and their dispositions and habits, as in quadrupeds, are influenced by the nature of their food: whilst the carnivorous are fierce and untameable, the granivorous are mild, gentle, and easily domesticated; their flesh, also, is more wholesome and palatable. Birds, however, are more indiscriminate in their food than quadrupeds, and more frequently supply the deficiency of one kind of food by another; and in the young state almost all kinds are carnivorous or rather insectivorous. In mental capacity, birds fully equal quadrupeds, and, in some respects, surpass them. Parrots, starlings, &c., retain in memory many words and phrases which they have been taught, and many singing birds whole melodies. Their powers of memory seem also to be evinced by the fact that birds of passage, after an absence of six months, or even a longer time, and after travelling thousands of miles, return to their former home; the swallow to her beam, the finch to the tree where last year she reared her young, or where she herself was hatched. The difference between such birds as love to dwell in uninhabited places, secure from persecution, and such as are found in the neighbourhood of men, surrounded by dangers, is a proof that their prudence, cunning, and docility can be awakened and improved. The field sparrow is less cunning than the house sparrow, which has daily opportunity to observe the hostile intentions of man. In desert countries, birds will alight upon the barrel of the hunter's gun, when he levels it against them, whilst with us a mere stick borne upon the shoulder excites the suspicions of the wild goose. The voice is a peculiar gift of nature, by which the greater part of birds are distinguished from all the rest of the animal world. The windpipe of birds is composed of entire rings of cartilage, with an exception in the case of the ostrich. At its bifurcation is a glottis supplied with appropriate muscles, called the *lower* or *inferior larynx*. It is here that the voice of birds is formed; the vast body of air contained in the air-cells contributes to the force, and the windpipe, by its form and movements, to the modification of the voice. The superior larynx is very simple and unimportant. The gift of song is given to the male birds only, and their notes are mostly an expression of love; hence they are heard singing chiefly at the time when they are pairing. The birds sing only when they are cheerful. In sadness, during rough weather, and in bodily disorders, they are silent. It is commonly said that the gift of song is confined to the birds in northern climates, and that nature, in the warmer regions, has endowed them, instead, with more brilliant colours; but Foster relates, that in Otaheite the birds sing with charming sweetness; and Cook, on his first voyage, found the forests of Queen Charlotte's sound, in New Zealand, filled with little birds, whose voices sounded like silver bells. To no other animal have such various tones been granted for giving utterance to different feelings; hunger, fear, the dread of imminent danger, desire for society, or longing for his mate, love, melancholy, &c., are expressed by a variety of notes, which make a language intelligible not only to birds of the same species, but often to the other tribes. When one of the songsters of the wood perceives a bird of prey, the whole forest grows silent at his warning voice. Birds are spread over the whole earth; a few species extend even from the polar circles to the tropics: their places of abode are suited to their wants and peculiarities, and embrace rocks and dens, trees and shrubs, earth and water. Whilst wood-peckers and parrots pass all their time upon trees, partridges, quails, &c., remain on the ground; storks and herons visit the marshes; swans and water-fowl live in rivers and ponds. Birds are in general, very long-lived, although their growth is rapid, and their period of procreation very early. In quadrupeds, the duration of life usually bears a certain proportion to the period at which they attain their full powers; but it is very different with birds. A cock arrives at maturity in a year, and yet has been known to live upwards of twenty years; a linnet fourteen; parrots forty; and eagles a hundred years. From this longevity of birds, it is probable that they are subject to few diseases. The only one which is universal to them, if it can be termed a disease, is moulting, or the operation of changing their plumage, during the continuance of which, they are sickly and disordered, and many die. This process, which occurs every year, appears to be performed in the following manner:—When the feathers have attained their full size, the pen part, nearest the bird, grows harder, and shrinks in its diameter, thus gradually compressing, and finally obliterating the vessels which supply it with nourishment, and thus becomes an extraneous body, which is at last loosened in its socket, and falls off. Whilst these changes are taking place, the rudiments of the new feather are forming beneath, which rapidly attains its natural size, after it has been protruded through the skin. This process, it will be seen, is very analogous to the annual shedding of the horns in the deer tribe. (See *Deer*.) Most birds pair at certain seasons, and continue this conjugal union whilst the united efforts of both are necessary in the formation of their temporary habitations, and in the rearing and maintenance of their offspring. Some birds, however, especially among those of prey, continue their attachment to each other for a much longer period; sometimes even for life. In general, birds are more prolific than quadrupeds, and their productiveness is visibly increased by domestication. There is a remarkable circumstance connected with this subject, and which is peculiar to the feathered race—a bird, when she has produced her usual number of eggs, ceases, in ordinary cases, to lay. If, however, by any accident, these eggs are destroyed, she will again lay the same number. This is strongly marked in the common hen, who, if her eggs are constantly taken away, does not begin to hatch, but goes on producing eggs to an almost indefinite extent. The ovation of birds is considered as an important part of their history, and is closely attended to by writers on ornithology. Almost all birds incubate, or hatch their eggs, by keeping them at a uniform temperature by brooding over them. The ostrich and cassowary, however, do not perform this maternal duty, merely depositing their eggs in the sand, and leaving them to be hatched by the heat of the sun. (For the process of incubation, see *Incubation*.) Before laying, all other birds are directed by instinct to the operation of building a nest or habitation for their young. The nidification of birds has deservedly been a subject of much admiration; for they construct these temporary habitations with such exquisite skill as to exceed the utmost exertion of human ingenuity to imitate them. Their mode of building, the materials employed, and the situations selected, are as various as the different kinds of birds, and yet are all admirably adapted to their several wants and necessities. They conceal them carefully from the eyes of rapacious animals and of men, and their caution is greater in proportion to the dangers by which they are surrounded. The materials are carefully selected, and are generally united with great art. In the larger number of species, the female is the principal builder, whilst the male carries the materials. To give a detailed account of the construction of nests, would swell this article beyond all due bounds. Those who wish for full information on this interesting subject, will find it pleasingly and elaborately detailed in Rennie's Architecture of Birds. When the building is finished, the female lays her eggs: several water-birds lay but one, birds of prey two, crows and ravens four, the titmouse from eight to twelve, domestic hens forty to fifty. The eggs differ in size, form, colour, &c., according to the peculiarities of each species. After the warmth of the brooding female (in many species the male assists the female in this business) has developed and matured the germ in the egg, the young break out of the shells, and the love, tenderness, and care now shown by the parents are admirable. The mother warms the naked brood under her wings, whilst the father brings the choicest food. The feeble swallow defends herself and her young ones, or dies together with them; the domestic hen runs along the pond with cries of anguish when the young ducks which she has hatched, have been carried by their instinct into the water. When the young are produced, the next object of parental care is their protection and support; and these duties are fulfilled with astonishing spirit and industry. The most timid become courageous in defence of their progeny, and willingly expose themselves to danger to shield their tender and helpless offspring. The young of those birds who build on the ground are generally able to run soon after they are excluded from the shell, and the mother's care is confined to leading them to their food, and teaching them how to collect it. It is far different with those hatched upon trees; they remain in the nest for a long time, during which both parents are sedulously employed in providing them with a regular supply of food. When their plumage is fully grown, they are gradually taught to fly, and, qualified to provide for themselves, the parents forsake them, as no longer needing their care. Birds, although the most marked of all the classes of animals, resemble each other so closely in their specific characters, that their subdivision is extremely difficult. Like the mammalia, their distribution into orders is founded on the organs of manducation and those of prehension. From the difference of these organs, naturalists have arranged birds in various orders. The following is that adopted by Cuvier in the last edition of his Animal Kingdom:—1. BIRDS OF PREY (*accipitres*, Lin.); distinguished by their crooked beak and claws, by means of which they are enabled to overcome and prey upon other birds, and even the weaker quadrupeds. They hold the same rank among birds as the *carnivora* among quadrupeds. They all have four toes, and the nails of the great and middle toes are the strongest. They form two families, the DIURNAL and NOCTURNAL: the first having nostrils inserted in a naked cere, three toes before and one behind, without feathers; eyes directed sideways: the second having nostrils at the anterior edge of the cere, which is more or less covered with stiff hairs; the external toe capable of being turned behind; eyes large, directed forwards.—2. **Passerine** (*passeres*). This is the largest class, and embraces all birds which do not belong to the other five; they present a great resemblance in their structure, and the genera are so closely allied that it is difficult to distinguish between them. They may, however, be separated into two great divisions; 1. those with the exterior toe united to the middle one, by one or two joints only; 2. exterior toe almost as long as the middle one, and united to it as far as the last joint but one.—3. **Climbers** (*scansores*); birds whose exterior toe directs itself backwards like the great toe, affording a very solid support, by which some of them profit in clinging to, and climbing the trunks of trees.—4. **Gallinaceous Birds** (*gallinaceæ*). These have a heavy gait, a short flight, a medium-sized beak, the upper mandible vaulted, nostrils partly covered by a cartilaginous scale, toes generally dentated at the edges, with short membranes between those in front.—5. **Waders** (*grallæ*) may be recognised by the nudity of the lower part of their thighs, very frequently the length of their legs, generally some little web, at least, between the external toes. In flying, they extend their legs behind them, contrary to the habit of other birds, who draw them up close to the body.—6. **Web-Footed Birds** (*palmipedes*) are strongly characterized by their feet, formed for swimming, that is, being affixed to the hinder part of their body, with very short and compressed tarsi; and palmated between the toes. They are the only birds in which the length of the neck exceeds that of the legs.—Each of these orders is subdivided into families and genera, principally according to the formation of the beak.

While we have thought it proper to give a brief outline of Cuvier's classification of Birds, we adopt the system of Temminck, with the addition of some new genera. This arrangement is simple and distinct, and but slightly altered from that of Linnæus. He separates the class Aves or Birds into sixteen orders, with the following characters:—

I. **Rapaces.**—Birds of prey.
II. **Omnivores.**—Such as live on all kinds of food.
III. **Insectivores.**—Those which feed principally on insects.
IV. **Granivores.**—Birds which feed on grain.
V. **Zygodactyli.**—Those having two toes before, and two behind, pl. 72, f. 43.
VI. **Anisodactyli.**—Those which have the middle toe joined to the exterior one at the base, pl. 72, f. 42.
VII. **Alcyones.**—Those having three toes before united, and one behind, pl. 72, f. 44.
VIII. **Chelidones.**—Having short legs, three toes before divided, or only united at the base by a short membrane; the hinder toe often reversable, pl. 72, f. 46.
IX. **Columbæ.**—Those which have three toes before, entirely separated, and one behind.
X. **Gallinæ.**—Having three toes before, entirely separated; the hinder toe united to the tarsus above the joint of the other toes.
XI. **Alectorides.**—Birds having a long and slender tarsus; three toes before and one behind; the hinder toe articulated higher on the tarsus than those in front.
XII. **Cursores.**—Birds with long legs, naked above the knee, with two or three toes directed forwards, pl. 72, f. 45 and 49.
XIII. **Grallatores.**—Those birds which have long and slender legs, more or less naked above the knee; three toes before and one behind, the hinder one jointed on the same level with the others, or more elevated.
XIV. **Pinnatipedes.**—Birds with feet of medium length; the tarsi slender or compressed; three toes before and one behind, with a rudimentary membrane along the sides of the toes; the hinder one joined interiorly to the tarsus, pl. 72, f. 62.
XV. **Palmipedes.**—Those which have short feet, more or less drawn up to the abdomen; anterior toes partly or wholly united by a membrane; the posterior toe articulated interiorly upon the tarsus, or totally wanting in some genera, pl. 72, f. 47.
XVI.—Birds whose legs are retracted into the abdomen; feet with three toes divided in front; the hinder toe short, and articulated anteriorly, pl. 72, f. 48.

TERMINOLOGY OF THE PARTS OF BIRDS.

Of the Skeleton. Pl. 72, f. 39.

a a. The vertebræ of the neck, or cervical bones.
b. The metacarpal bones.
c. The phalanges.
d. The Ulna.
e. The metacarpal bone of thumb.
f f. The ball of the Ulna.
g. The radius.
h. The os humeri.
i. The atlas.
k. The ribs.
l l. The tibia, or thigh-bone.
m. The fibula, or leg-bone.
n. The ball of the tarsus.
o. The tarsus.
p p. The phalanges of the toes.
q. The phalanges of the heel.
r. The sternum, or breast-bone.
s s. The clavicle, or collar-bone.
t. The last true rib.
u. The vertebræ of the back.
v. The pelvis.
w. The vertebræ of the tail.
x. The os coccygis.

External Anatomy of Birds. Pl. 72, f. 41.

Parts of the head and neck.
a, b, g. Upper mandible.
a to g. Culmen, or ridge of the bill.
g. Frons, or forehead,
h. Corona, or crown of the head.
i. Sinciput, or hinder part of the head.
o. Nucha or nape of the neck.
k. Supercilium, or eyebrows.
m. The ear covers, or auricles.
d. Under mandible.
e. Barba, or beard.
R. Notch.
f. Mentum, or chin.
r. Gula, or gullet.
s. Jugulum, or lower part of the throat.
p. Auchenium, or lower part of the neck.

Back.
V V. Interscapulum, or space between the shoulder blades.
S S. Tergum, or middle of the back.
I. Uropygium, or rump.
H. The tail coverts.

Body.
t. Pectus, the breast.
W. Epigastrum, or stomach.
A A. Abdomen.
Z Z. Venter, or belly.
Y. Hypochondria, sides of the abdomen.
B. Crissum, or vent.

Wing.
D D. *Tectrices minores*, or lesser wing-coverts.
E E. *Tectrices mediæ*, or middle wing-coverts.
Z Z. *Scapulares*, scapulars.
F. *Primariæ*, Primaries, or quills.
G. *Remiges*, or rowers.
X. *Alula spuria*, or bastard wing; f. 40, bone of do. at *d c*; feathers of do. *e*.
U. *Humeri*, or shoulder of the wing,

Tail.
K. *Rectrices intermediæ*, or middle tail feathers.
L. *Rectrices laterales*, or side tail feathers.

Legs.
M. Tibia, or thigh.
a. Tarsus, or shank.
Digiti, or toes.
P. P. Hallux, heel, or hind toe.
O O. Acrostarsium, or front of the leg.

The Bones of the Wing and their Feathers. Pl. 72, f. 40.

a. This wing bone is termed the Brachium, or arm.
b the cubitus, c the carpus, d the spurious wing bone, e the primaries, f the secondaries, g the tertials.

Examples of Bills. Pl. 72.

F. 53. A straight bill with an inflected point, genus *Vultur*.
F. 52. A straight bill, notched towards the point. *Barita*.
F. 50. A robust bill, serrated at the point of the upper mandible *Opæthus*.
F. 54. A robust notched bill. *Trogon*.
F. 55. A straight cuneate bill. *Corvus*.
F. 56. A cylindrical bill, with reflected serri. *Mergus*.
F. 57. A recurved bill. *Mycteria*.
F. 62. An elongated, compressed bill, with a turgid lip. *Scolopax*.
F. 59. A gibbous arcuated bill. *Psittacus*.
F. 60. A spatulate bill. *Platalea*.
F. 61. A groping bill. *Anastomus*.
F. 51. A straight, narrow bill, as in *Quiscalus*.
F. 58. A slender, curved, depressed bill. *Phalaropus*.

ORDER I.—RAPACES.

Bill short, strong; upper mandible covered at its base by a cere, compressed, and hooked towards its extremity; nostrils open; legs strong, muscular, generally short, and feathered to the knees or feet, with three toes in front, and one behind, either divided or united at the base by a membrane; middle toe longest, and united with the exterior one at the base.

Vultur fulvus. Griffon Vulture. Pl. 67, f. 1. Bill short, thick, deeper than broad, its base covered with a cere; upper mandible straight, hooked towards the point; under mandible straight, rounded, and inclined at the tip; head divested of feathers, in some species covered with a short down; nostrils naked, lateral, opening diagonally towards the edge of the cere, legs robust, provided with slightly hooked claws; the middle toe largest, and united with the exterior one at the base.

Cathartes Papa. King of the Vultures. Pl. 68, f. 1. Bill long, straight, compressed, hooked towards the point; cere naked, covering half the beak; upper mandible tumid towards the tip; head oblong, which, with the upper part of the neck, is destitute of feathers; nostrils longitudinally cleft, placed in the middle of the bill, adjoining the ridge of the upper mandible, broad, and sometimes surmounted by fleshy appendages; legs more or less slender, with a naked tarsus; middle toe long, and united to the exterior one at the base.

Gypaetus barbatus. Bearded Vulture. Pl. 68, f. 9. Bill long; upper mandible arcuated towards the point, and beak like a hook; nostrils oval, covered, with bristly hairs directed forwards; feet short, three anterior toes united by a short membrane, the middle one considerably longer than the others; nails slightly hooked; wings long.

Gypogeranus Serpentarius. Secretary. Pl. 68, f. 3. Bill thick, strong, shorter than the head, bent from its base, where it is provided with a cere, a little arcuated and compressed at its point; nostrils lateral, diagonal, open, somewhat separated at the base, situated in the cere; legs very long and slender; tibia feathered; tarsus long, naked, more slender at the base than above; toes short, verrucose below, the anterior ones united at the base; hallux articulated on the tarsus; wings long, armed with a spur, the first five quills longest, and nearly equal.

Polyborus vulgaris. Brazilian Caracara Eagle. Pl. 68, f. 6. Bill somewhat elongated, deep, and laterally compressed, upper mandible strongly hooked at the tip, base covered with a hispid cere; nostrils narrow, elliptical, somewhat oblique near the ridge of the beak; wings nearly equal to the tail in length, and fourth quills the longest; tarsus long and naked; claws of moderate length, slightly curved.

Falco Islandicus. Jerfalcon. Pl. 67, f. 3. Bill hooked, generally curved from its base, at which there is a coloured cere, partially covered with hairs at its base; mandibles notched in some species; nostrils lateral, open, oval, or roundish, situate in the cere; tarsus wholly or partly covered with feathers; toes strong, long, provided with long, sharp claws; wings long, the first quill and the third of equal length, the second longest.

Harpyia destructor. The Harpy Eagle. Pl. 68, f. 7. Bill strong, upper mandible very thick at the base, straight for a certain length, from whence it suddenly curves downwards with a strong arch towards the point, which is very sharp; lower mandible short, straight, and obtuse; nostrils transverse, oval; wings reaching to the middle of the tail; tarsus very strong, partially covered with feathers in front, strongly reticulated below.

Aquila fucosa. Wedge-tailed Eagle. Pl. 68, f. 2. Bill straight at the base, strong, greatly hooked at the point, compressed, with the sides inclining upwards, and forming a narrow ridge or culmen: nostrils oval, lateral, transverse; wings large, fourth and fifth quills the longest; tarsus clothed with feathers to the toes; toes short, the outer and middle ones united at the base by a membrane; claws strong, hooked, sharp, and grooved beneath.

Haliaetus leucocephalus. White-headed Eagle. Pl. 67, f. 2. Bill elongated, strong, straight at the base, curving in a regular arc in advance of the cere to the tip, and strongly hooked; culmen broad and flat; nostrils large, luniform, transverse, pierced in the cere; wings ample, the fourth quill the longest; tarsus half covered with feathers, front naked and scutellated, sides and back reticulated; toes divided their whole length; claws strongly hooked, and grooved beneath, claw of the hallux larger than that of the inner toe, which exceeds in length those of the middle and outer toes.

Astur atricapillus. Goshawk. Pl. 68, f. 13. Bill short, bent from its base, sides compressed, upper mandible with a lobe upon its cutting margin; nostrils oval, opening obliquely; wings short, hardly reaching the centre of the tail when closed, fourth quill longest, inner webs of the first five deeply notched; tarsus of medium length, scutellated in front; middle toe much longer than the other; hallux strong; claws strong, incurved, and sharp.

Buteo Americanus. American Hen Harrier. Pl. 68, f. 10. Bill rather slender, incurved from its base; upper mandible slightly sinuated, with an obtuse lobe, sides compressed; under mandible shallow, the tip obliquely truncated; cere large; nostrils pyriform, the narrow end turning upwards; wings long, first quill very short, not exceeding the seventh in length; the second shorter than the fifth; the third and fourth the largest in the wing, the first four with their webs deeply notched; tarsus short, naked in front, or feathered to the toes; toes short, united at the base; claws strong, but not much hooked.

Elanus furcatus. Swallow-tailed Hawk. Pl. 68, f. 12. Bill weak, of medium length, compressed, nearly straight at the base, and hooked at the tip; wings long, with the second feathers generally the longest, the first and second with their inner webs strongly notched; tail long, more or less forked; tarsus short, feathered half way down, naked part reticulated; claws strong, incurved; under surface in some species partly rounded.

Bubo nævia. Mottled owl. Pl. 68, f. 11. Bill short, strong, bent from the base, compressed towards the tip; nostrils large, oval, or rounded, placed in the upper part of the cere; facial disc small, somewhat incomplete about the eyes; head provided with tufts in the form of horns; auditory opening small, oval, destitute of an operculum; wings rather short, concave; third and fourth quill-feathers generally the largest; tarsus and toes clothed with feathers; outer toe reversible; claws long, moderately curved, and very sharp.

Noctua Dalhousiei. Dalhousie's Owl. Pl. 67, f. 4. Bill bending from the base, much curved; cere short, in the anterior part of which the nostrils are placed; auditory conch large, with a narrow operculum; facial disc complete; wings of medium length, ample and rounded; the third and fourth quills longest, and nearly equal; inner webs of the first primaries notched; tail slightly rounded, and longer than the wings when closed; tarsus and toes more or less feathered; claws moderately incurved; the inner and middle one grooved, and the outer one and the hallux nearly cylindrical.

ORDER II.—OMNIVORA.

Bill of medium size, robust, sharp at the edges; upper mandible more or less convex, and notched near the point; feet provided with four toes, three before, and one behind; wings of medium size, with the quill-feathers terminating in a point.

Opisthocomus cristatus. Crested Hoatzin. Pl. 67, f. 27. Bill short, thick, convex, bent at the point; base laterally dilated; lower mandible strong, with an angular termination; nostrils situate in the middle of the bill, covered by a membrane; legs strong; tarsus shorter than the middle toe; toes bordered by rudimentary membranes; first quill of wing short; the four next graduated, and the sixth longest.

Buceros Abyssinicus. Abyssinian Hornbill. Pl 67, f. 6. Bill very large, long, convex, curved, and sharp at the edge, and serrated at the margin, with a horny protuberance near the base of the upper mandible rising into a crest; nostrils behind the base of the bill covered by a membrane; legs short, strong; lateral toes equal, the external one united to the second joint; first three wing quills graduated, the fourth or fifth longest.

Prionites ruficapillus. Red Headed Saw-Bill. Pl. 69, f. 6. Bill medium size, strong; head convex above, bent and compressed towards the point; edges of both mandibles serrated; nostrils basal, lateral, oblique, open, partly concealed by feathers; toes lateral, unequal, the internal one very short, joined at its base; external united to the second joint; wings short, first three quills graduated, the fourth and fifth longest.

Corvus Corax. Raven. Pl. 67, f. 7. Bill straight at the base, thick; sides compressed, bent towards the point, and edged; nostrils oval, open, placed at the base of the bill, covered by reflected bristly feathers; wings pointed; the first quill shorter than the others, the third and fourth longest; tarsus and feet strong, plated, with three toes before, and one behind; claws strong, curved; toes divided; tarsus longer than the middle toe.

Garrulus Canadensis. Canada Jay. Pl. 67, f. 8. Bill shorter than the head, conical, slightly compressed, strait at the base, rather reflected towards the tip, which is faintly emarginate; lower mandible of nearly equal thickness, its culmen equally convex with that of the upper; nostrils basal, lateral, covered by short cetaceous feathers; wings rounded, first quill short, the fourth, fifth, and sixth, of nearly equal length, and longest in the wing; tail of medium length; tarsus longer than the middle toe, outer toe joined at its base to the middle one, and longer than the inner; hallux strong, with a dilated sole; claws stout, moderately curved, and sharp.

Quiscalus Versicolor. Purple Grakle. Pl. 67, f. 23. Bill straight, strong, smooth, somewhat compressed at the base; edge angular, bent inwards; upper mandible forming an acute angle, with the feathers of the head tapering towards its point; nostrils dilated, oval, covered by the membrane; tarsus annulated; middle toe attached to the exterior one, the length of the first joint, but quite separate from the interior one; wings medium length; first and fifth quills of equal length, the third and fourth the longest; tail with twelve feathers.

Nucifraga guttata. Speckled Nutcracker. Pl. 67, f. 22. Bill long, straight, narrowed at the point; upper mandible rounded, longer than the under, both terminated in an obtuse, depressed tip; nostrils basal, round, open, and concealed by protruding hairs; three toes before, and one behind; tarsus longer than the middle toe; wings accuminated, fourth quill-feather longest.

Pyrrhocorax alpinus. Red-legged Crow. Pl. 67, f. 12. Bill of medium size, slender, compressed, bent, smooth, and slightly notched; nostrils basal, lateral, ovoid, entirely concealed; tarsus strong, longer than the middle toe; toes almost wholly separated; claws strong, bent; wings cuneiform, the fourth and fifth quills longest.

Barita cractica. Noisy Roller. Pl. 67, f. 11. Bill long, strong, convex above, notched at the point, destitute of a nasal furrow; nostrils lateral, pierced longitudinally in the bill, covered above, and half closed by the corneous substance; legs strong; tarsus longer than the intermediate toe; external toe united to the first joint, the internal one free; hallux long, strong; wings of medium size or long, the fourth or sixth quill longest.

Glaucopis cinerea. Wattle Bird. Pl. 67, f. 13. Bill of medium length, thick and stout; upper mandible convex, arcuated, curved towards the point, covering the edges of the lower, at the base of which is a fleshy membrane or wattle; nostrils basal, lateral; legs strong; tarsus longer than the middle toe; hallux with a long and crooked nail.

Gracula religiosa. Sacred Mino. Pl. 67, f. 10. Bill of medium length, strong, greatly compressed, convex above, narrow at the point, where it is notched in some species; nostrils lateral, open, partly concealed by the facial feathers; legs strong; tarsus length of the middle toe, the external one joined at its base, the internal one free; hallux short; third wing-quill longest.

Bufaga rufescens. Reddish Oxpecker. Pl. 67, f. 19. Bill medium sized, strong, thick, obtuse; lower mandible stronger than the upper, both gibbous at the point; nostrils basal, half closed by an arched membrane; tarsus longer than the middle toe; wings of medium size, first quill very short, the second almost as long as the third.

Bombycivora cedorum. Cedar Bird. Pl. 67, f. 30. Bill short, strait, broad at the base; upper mandible slightly curved at the point, with a small notch; nostrils basal, ovoid, open, concealed by protruding bristles; three toes before, and one behind, the exterior joined to the middle one; wings of medium size, first and second quills longest.

Ptilonorynchus nuchalis. Ruffed Ptilonorynchus. Pl. 69, f. 20. Bill short, strong, depressed at the base, bent, notched at the point; lower mandible gibbous in the centre; nostrils basal, lateral, round, concealed by the feathers; legs short, strong; tarsus longer than the middle toe, which is attached to the exterior one by the first joint; hallux strong, curved; the fourth and fifth wing-quills longest.

Coracias viridis. Green Roller. Pl. 69, f. 5. Bill straight, compressed, higher than broad, upper mandible bent towards the point; nostrils linear, lateral; legs short, strong, formed for walking; three toes before, and one behind, entirely divided; wings long, first quill somewhat shorter than the second.

Colaris Afra. African Colaris, or Roller. Pl. 69, f. 12. Bill short, strong, depressed, sides dilated, much broader than deep, ridge rounded, point a little hooked, some species having a notch, and others not; lower mandible concealed by the margin of the upper; nostrils basal, long, cleft diagonally, half shut by a membrane which is covered with feathers; legs short; tarsus shorter than the middle toe, anterior toes joined at their base; wings long, second quill longest.

Oriolus Sinensis. Chinese Oriole. Pl. 67, f. 15. Bill form of a lengthened cone, horizontally compressed at the base, and marginated; upper mandible surmounted by a ridge, notched at the point; nostrils basal, lateral, naked, and horizontally pierced in the membrane which is large; tarsus same length as the middle toe, shorter in some species, and middle toe joined to the exterior one; first wing-quills very short, the third longest.

Icterus Phœniceus. Red-winged Troopial. Pl. 69, f. 2. Bill as long or longer than the head, straight like an elongated cone, pointed, sharp, somewhat compressed, destitute of a distinct ridge or notch, base covered by feathers; margins of mandibles more or less incurvated; nostrils basal, lateral, and covered by a horny rudimentary membrane; tarsus as long, or longer, than the middle toe; wings long, third and fourth quills longest.

Yephantes spurius. Orchard Baltimore. Pl. 69, f. 4. Bill nearly straight, entire, edge straight, a little sharp and thin; base of upper mandible forming an angle in front; nostrils dilated, and covered by a membrane; tongue cartilaginous, fringed at its extremity; tarsus naked, annulated; middle toe attached to the base of the exterior one, and totally separated from the interior; wings of medium length; second and third quills the longest.

Sturnus unicolor. Sardinian Starling. Pl. 69, f. 1. Bill straight, form of an elongated cone, depressed and slightly obtuse; base of upper mandible projecting on the forehead, the point much depressed, and destitute of a notch; nostrils basal, lateral, half closed by an arched membrane; wings long, first quill very short, the second and third longest; three toes before, and one behind; the exterior joined at its base to the middle one.

Pastor cristatellus. Chinese Pastor. Pl. 67, f. 26. Bill the form of an elongated cone, slightly arcuated; edge greatly compressed, point with a small notch; nostrils basal, lateral, ovoid, half closed by a membrane, furnished with small feathers; legs strong; three toes before, and one behind, the exterior joined at the base to the middle one; first quill of wing very small, the second and third longest.

Paradisea rubra. Red-tailed Bird of Paradise. Pl. 67, f. 16. Bill of medium length, straight, quadrangular, compressed, pointed, somewhat convex above; ridge between the feathers of the forehead; nostrils basal, marginal, open, but entirely concealed by the feathers; legs short; tarsus longer than the middle toe; lateral toe unequal, the internal one united to the second joint; hallux strong, longer than the toes; first five wing-quills graduated, the sixth and seventh longest.

Ptiloris Paradiseus. New Holland Ptiloris. Pl. 69, f. 21. Bill long, greatly arcuated, upper mandible unequal, and notched near the tip; nostrils basal, nearly concealed by the feathers of the forehead; tarsus short and strong; feet with three free toes in front, and a very strong hallux, the middle toes longest; claws strong and hooked; first quill of wings the longest.

Lamprotornis gularis. Gorget Bird of Paradise. Pl. 68, f. 4. Bill of medium size, convex above, compressed and notched at the point; base depressed, a ridge between the feathers of the forehead; nostrils basal, lateral, ovoid, half closed by an arched membrane, frequently covered by feathers; legs long; tarsus longer than the middle toe; internal toe joined at its base, the external one free; fourth and fifth wing-quills longest.

ORDER III.—INSECTIVORA.

Bill of medium size, or short, straight, rounded, or awl-shaped, slightly edged; upper mandible curved and notched at the point; frequently provided at the base with coarse protruding hairs; feet with three toes before, and one behind, articulated on the same level, the exterior united at its base, or to the first joint of the middle toe.

Merula livida. Cat Thrush. Pl. 69, f. 43. Bill of medium size, sharp edged, compressed and recurved at the tip, upper mandible notched near the point; at the opening of the mandibles, there are long bristles; nostrils basal, ovoid, lateral, half concealed by a naked membrane; tarsus longer than the middle toe, to which last the exterior one is united at its base.

Chloropsis gampsorhynchus. Hook-billed Chloropsis. Pl. 69, f. 22. Bill of medium size rather slender, tapering, incurvated, acute, trigonal at the base, compressed at the middle and point; edges of the mandibles turned inwards; nostrils basal, lateral, membrane naked; wings rounded, of medium size, first quill short, second and third longer, the fourth and fifth the longest, and nearly equal; tarsus and toes short, the external and middle one attached at the base; hallux strong, nails sulcated, compressed, incurved.

Cinclus superciliosa. Supercilious Dipper. Pl. 67, f. 28. Bill rather slender, slightly recurved, compressed at the sides: point of the upper mandible bent over the lower one; nostrils basal, lateral, longitudinally cleft, and partly covered by a membrane; three toes before, and one behind; the exterior joined at its base to the middle one; tarsus longer than the middle toe; wings short.

Menura Novæ Hollandiæ. New Holland Menura. Pl. 69, f. 3. Bill straight, broader than deep at the base, somewhat slender, bent and notched at the point, the base with protruding setaceous plumes; lower mandible shorter than the upper; nostrils placed in the middle of the bill, large, oval, and covered by a membrane; claws as long as the toes, broad, obtuse, convex above; wings short, concave.

Pitta cyanura. Blue-tailed Pitta. Pl. 69, f. 8. Bill of medium size, strong, hard, compressed; slightly inclined from its base, and bent and notched at the point; ridge elevated at its base; nostrils basal, lateral, half closed by a naked membrane: legs long, slender, tarsus double the length of the middle toe; the internal toe united at the first joint; wings short, rounded, the three first quills equally graduated, the fourth and fifth the longest; tail short, equal, or rounded.

Myiothera fusca. Brown Antcatcher. Pl. 69, f. 10. Bill long, straight, convex above, the ridge somewhat arched, and bent abruptly at the point, lower mandible conical, and a little turned up at the point; nostrils basal, lateral, half concealed by a membrane; legs long, slender, or of medium length; lateral toes nearly equal, the internal one united to the first joint: wings short, rounded, the fourth and fifth quills longest; tail short, equal, or long and graduated.

Thamnophilus olivaceus. Olive Bush-Shrike. Pl. 67, f. 36. Bill short, robust, thick, somewhat gibbous, expanded at the base, dilated at the sides, compressed towards the point, which is obtuse, greatly bent, and notched; nostrils situate a little from the base, lateral, rounded, or oval, open, pierced in the horny substance of the bill; tarsus longer than the middle toe; external toe united to the first joint; wings short, rounded, the fourth, fifth, and sixth quills longest and equal.

Vanga cristata. Crested Vanga. Pl. 69, f. 7. Bill long, hard, margined, much bent at the point, and sharp; nostrils a little distant from the base, lateral, and pierced in the horny substance, covered above by a cartilage; base of bill with stiff hairs; tarsus as long, or longer than the middle toe, external toe united to the first joint; the third wing-quill longest.

Lanius excubitor. Great American Shrike. Pl. 69, f. 11. Bill of medium size, strong, straight from its base, and greatly compressed; upper mandible much bent towards the point, which is hooked, and strongly notched, base destitute of a cere, provided with strong, protruding hairs; nostrils basal, lateral, nearly round, and half closed by a membrane, and frequently half concealed by hairs; tarsus longer than the middle toe: three toes before, and one behind, separate; third and fourth wing-quills longest.

Psaris Vieilloti. Vieillot's Psaris. Pl. 69, f. 23. Bill short, thick, conical, round, hard, ridged, depressed at the base, compressed at the point, which is hooked and notched, destitute of a nasal furrow; nostrils remote from the base, lateral, round, open, and pierced in the corneous substance; legs strong; tarsus short, length of the middle toe; external toe united to the first joint, the internal one at the base; wings of medium size, the third and fourth longest.

Sparactes cristatus. Crested Sparactes. Pl. 69, f. 24. Bill strong, thick, somewhat depressed at the base, sides much dilated, destitute of a projecting ridge, point somewhat bent, compressed, and slightly notched, with a distinct nasal furrow; lower mandible strong, broad, with an obtuse point; nostrils basal, lateral, situate in a furrow of the corneous substance; tarsus strong, and longer than the middle toe.

Ocypterus viridis. Madagascar Ocypterus. Bill somewhat depressed at the base, with the point compressed and notched; upper mandible convex above, and bent at the point; nostrils lateral, distant from the base, pierced in the corneous substance, concealed by short hairs at the base; legs and toes short, wings long, the second and third quills longest and equal.

Tricophorus barbatus. Bearded Tricophorus. Pl. 68, f. 20. Bill short, strong, conical, compressed at the point, dilated at the base, and bristled; upper mandible bent, and slightly notched towards the point; tarsus shorter than the middle toe, the external one united to the second joint; fourth, fifth, and sixth wing-quills longest.

Edolius cristatus. Crested Edolius. Pl. 69, f. 25. Bill strong, depressed and bristled at the base, and compressed at the point, upper mandible convex, bent, and hooked at the point; nostrils basal, lateral, half covered with the bristles and feathers; tarsus short, slender; fourth, fifth, and sixth wing-quills longest; tail more or less forked.

Ceblepyris niger. Black Ceblepyris. Pl. 68, f. 17. Bill short, thick, strong, dilated at the base; somewhat tumid and compressed at the point; upper mandible arcuated, and hooked towards the point; lower mandible straight, nearly equal to the upper; nostrils basal, lateral, ovoid, concealed by close-set hairs; tarsus short and slender; lateral toes unequal, united at the base; fourth and fifth wing-quills longest.

Coracina gymnodera. Bare-necked Coracina. Pl. 69, f. 26. Bill straight, thick, angular, convex above, compressed, and tapering at the point, and slightly notched, with short hairs at the base; nostrils basal, roundish, open before, and closed behind by a feathered membrane; tarsus strong, shorter than the middle toe; fourth and fifth quill feathers longest.

Querula rubicollis. Purple Throated Querula. Pl. 68, f. 15. Bill depressed, triangular, both mandibles tumid; upper mandible sloping and hooked, and slightly notched towards the point; lower mandible very slender, and turned up at the tip; base provided with nuchal bristles; tarsus naked, annulated; the middle toe joined to the external one, length of first articulation, but totally separated from the interior; wings long, first and eighth quills equal; the second and sixth shorter; the fourth the longest of the whole; tail with twelve feathers.

Amplis cærulea. Blue Chatterer. Pl. 69, f. 49. Bill short, somewhat depressed, deeper than broad; trigonal at the base, notched, and abruptly bent at the point; nostrils basal, lateral, rounded, half closed by a membrane; tarsus length of middle toe, sometimes shorter, lateral toes united to the second joint; second wing-quilll longest.

Casmarhynchos variegatus. Variegated Chatterer. Pl. 69, f. 28. Bill broad, greatly depressed, soft and flexible at the base, corneous, compressed, and notched at the point; nasal furrow large, ovoid, open, placed near the point of the bill, and provided with small feathers; tarsus longer than the middle toe; third and fourth quills longest.

Procinias ventralis. Blue Berry-eater. Pl. 68, f. 8. Bill broader than the forehead, dilated on the sides, strong, depressed, and greatly compressed and notched at the point; ridge a little raised at the base; nostrils basal, tubular, bordered by a membranous circle; tarsus longer than the middle toe; second and third wing-quills longest.

Rupicola elegans. Elegant Rupicola. Pl. 69, f. 13 Bill of medium length, strong, slightly arcuated, bent and notched at the point; lower mandible straight, pointed; nostrils basal, lateral, ovoid, concealed by the semicircular feathers of the tuft; tarsus strong, length of middle toe, and partly covered by feathers; external toe united beyond the second joint; first wing-quills filiform, much elongated.

Phibalura flavirostres. Yellow-billed Phibalura. Pl. 69, f. 29. Bill very short, somewhat conoid, convex above, and dilated on the sides; upper mandible notched at the point, lower one straight; nasal furrow very small, nostrils basal, covered by a membrane; first and second wing-quills longest; tail long, slender, and greatly furcated.

Pipra caudata. Fork-tailed Manakin. Pl. 69, f. 14. Bill trigonal, compressed and notched at the base, which is dilated; nostrils basal, lateral, open, half concealed by a feathered membrane; wings and tail usually short; two exterior toes united at about half their length; fourth and fifth wing-quills longest.

Pardalotus striatus. Striated Manakin. Pl. 69, f. 48. Bill very short, thick, dilated at the base, with a distinct ridge, both mandibles equally strong, and of same length, convex, and somewhat obtuse, the upper one notched; nostrils basal, lateral, and covered by a membrane, tarsus slender, longer than the middle toe.

Todus viridis. Green Tody. Pl. 69, f. 16. Bill long, broader than deep, formed of two thin plates, with a distinct ridge; point of upper mandible straight, divided at the tip, the lower obtuse and truncated; nostrils open, rounded; base of mandibles beset with long hairs; toes lateral, unequal, the external one united to the third joint, and the internal one to the second, wings short, fourth quill longest.

Platyrhynchos collaris. Collared Platyrhynchos. Pl. 68, f. 14. Bill broader than the face, dilated on the sides, greatly depressed, point bent and notched; nostrils basal, round, or oblique, closed above by a feathered membrane; tarsus longer than the middle toe; exterior toe united to the middle one, to the first joint; nail of the hallux strong, hooked; third and fourth wing-quills longest.

Muscipeta regia. Coast Muscipeta. Pl. 69, f. 44. Bill greatly depressed, broader than deep; upper mandible with a sharp ridge, hooked and incurved on the lower, and generally notched; lower mandible much depressed, and sharp, base provided with long hairs, which frequently project beyond the bill; nostrils basal, open, lateral toes unequal, the external one united to the second joint; first three wing-quills graduated, the third and fourth longest.

Muscicapa Saya. Says Muscicapa. Pl. 67, f. 25. Bill strong, angular, depressed at the base, compressed and curved towards the point; base beset with long, stiff hairs; nostrils basal, lateral, ovoid, partly covered by hairs; tarsus length of the middle toe; lateral toes always equal.

Setophaga cærulea. Blue Gnat-catcher. Pl. 69, f. 45. Bill entirely depressed with an acute ridge, and beset with bristles at its base; fourth and fifth wing-quills equal, and a very little shorter than the second and third; tarsus long, slender, and naked, lateral toes equal, scarcely longer than the hallux, and considerably shorter than the middle one.

Vireo olivacea. Red-eyed Chat. Pl. 67, f. 27. Bill straight, long, abruptly bent and notched at the point, both mandibles compressed at the sides; nostrils basal, roundish; base of the bill with bristles; wings long, pointed; second and third quills equal and longest; first and fourth nearly equal; tarsus longer than the middle toe; the three anterior toes more or less connected at the base, interior one shortest; nails much curved and compressed; that of the hallux strongest.

Malurus Brownii. Brown's Malurus. Pl 69, f. 36. Bill slender, deeper than broad; upper mandible slightly arcuated, base with small stiff hairs; nostrils basal, lateral; tarsus slender, exterior toe united to the second joint; wings very short, rounded; tail very long and slender.

Sylvia virens. Black-throated Green Warbler. Pl. 67, f. 20. Bill straight, slender, subulate, base deeper than broad; upper mandible with its point frequently notched, under one straight; nostrils basal, lateral, ovoid, partly covered by a membrane; tarsus longer than the middle toe; exterior toe joined at its base to the middle one; first wing-quills very short, second scarcely longer than the third.

Regulus Americanus. American Kinglet. Pl. 67, f. 14. Bill straight, slender, deeper than broad, compressed, the edges inflected; nostrils basal, with slender protruding bristles; first wing-quill short, second shorter than the third, which is the longest; tarsus longer than the middle toe.

Troglodytes palustris. Marsh Wren. Pl. 69, f. 42. Bill slender, slightly compressed, arcuated and emarginated; nostrils basal, half closed by a naked membrane; wings short and rounded, fourth and fifth quills of equal length, and longer than the others; tail short, rounded, erect; tarsus the length of the middle toe.

Saxicola rubicola. Stone Chat. Pl. 69, f. 46. Bill straight, slender, slightly carinated, and advancing upon the forehead; upper mandible a little bent above, and emarginate; nostrils basal, lateral, ovoid, partly concealed by a membrane; tarsus considerably longer than the middle toe; external toe joined to the middle one at its base; third and fourth quills longest.

Accentor alpinus. Alpine accentor. Pl. 69, f. 47. Bill of medium length, straight and strong, with an acute point; edges of mandibles compressed, the upper one emarginate; nostrils basal, naked, pierced in the membrane, which is large; tarsus strong; exterior toe united at its base to the middle one; third wing-quill longest.

Motacilla Borealis. The Arctic Wagtail. Pl. 67, f. 35. Bill straight, subulate, slender, angular between the nostrils; edges of lower mandible compressed; nostrils basal, lateral, oval, partially concealed by a naked membrane; tarsus considerably longer than the middle toe; exterior toe joined to the middle one at the base; hallux strong and long in some species; tail very long, equal, horizontal; one of the greater coverts as long as the quills.

Enicurus coronatus. White-crowned Enicurus. Pl. 68, f. 22. Bill elongated, broad at the base; abruptly compressed towards the point; tip curved; nostrils situate in a groove, with an elevated membrane; tarsus slender; hallux short, strong; tail furcated.

Anthus rufulus. Reddish Pepit. Pl. 68, f. 46. Bill straight, cylindrical, slender, subulate near the tip, edges inflected towards the middle; base of upper mandible ridged, point slightly notched; nostrils basal, lateral, half closed by an arcuated membrane; hallux generally longer than the middle toe; third and fourth wing-quills longest.

Neops ruficauda. Red-tailed Neops. Pl. 68, f. 5. Bill slender, much compressed at the sides, entire and pointed; upper mandible straight, lower mandible shorter, curved downwards in the middle, and upwards at its tip, which is sharp; nostrils basal, oval, covered by a membrane; external and internal toes attached to the middle one as far as the first joint.

ORDER IV.—GRANIVORA.

Bill more or less conical, short, strong; culmen, or ridge, more or less depressed, advancing upon the forehead; mandibles generally destitute of notches; three toes before, and one behind, the anterior ones entirely divided; wings of medium length.

Alauda arvensis. Skylark. Pl. 69, f. 9. Bill short, subconic, mandibles of equal length, upper one slightly convex; nostrils basal, lateral, partly concealed by reflected feathers; claw of hallux much produced, nearly straight; first quill of wings short or wanting, third the longest; coronal feathers capable of being raised into a crest.

Parus ater. Coal Titmouse. Pl. 67, f. 5. Bill short, straight, robust, conical, compressed, pointed, base beset with small hairs; nostrils basal, rounded, concealed by projecting feathers; tarsus strong; toes divided to their origin, claw of the hallux large, and bent; first wing-quill of medium length, or nearly wanting in some species, fourth and fifth the longest.

Emberiza Lapponica. Lapland Long-spurred Bunting. Pl. 69, f. 41. Bill short, robust, conical, compressed, upper mandible narrower than the under one, edges of both sharp and inflected; nostrils basal, rounded, surmounted, and partly covered by the feathers of the forehead; toes divided; hallux with a short, bent claw; tail furcated, or slightly rounded.

Tanagra multicolor. Many-coloured Tanager. Pl. 69, f. 30. Bill short, strong, triangular at the base, carinated, greatly compressed and bent at the point; upper mandible longer than the under; edges of the mandibles inflected; under mandible straight, and somewhat gibbous towards the middle; nostrils basal, lateral, rounded, partly concealed by projecting feathers; tarsus length of middle toe; external toe joined at its base, the internal one free; second and third wing-quills longest.

Saltator olivaceus. Olive-coloured Saltator. Pl. 67, f. 69. Bill thick at the base, robust, convex above, sides laterally compressed; upper mandible arcuated, embracing the sides of the lower mandible, curved and notched at the point; lower mandible straight, somewhat shorter than the upper one; nostrils basal, small, and open; middle toe united to the base of the exterior one, interior quite free; wings of medium length, the first and fourth quills longest.

Ploceus personatus, Masked Weaver. Pl. 69, f, 31. Bill conical, sharp, strong, inflected, compressed at the point, edges of the mandibles bent inwards; nostrils basal, ovoid, open, situate near the ridge; tarsus same length as the middle toe; anterior toes united at the base; fourth quill longest.

Loxia leucoptera. White-winged Crossbill. Pl. 69. f. 38. Bill rather long, strong, greatly compressed, both mandibles equally convex, and crossing each other near the points, when closed; nostrils basal, round and lateral, concealed by reflected bristly feathers; toes divided their whole length; first wing-quill longest; tail bifurcated.

Psittirostra psittacea. Sandwich Island Parrot Bill. Bill short, greatly hooked and gibbous at the base; upper mandible bent over the lower one at the point; lower, broad, rounded, with an obtuse point; nostrils basal, lateral, half concealed by a feathered membrane; tarsus longer than the middle toe; toes divided their whole length, the lateral ones equal; first wing-quill obsolete, the second shorter than the third.

Pyrrhula vespertina. Evening Grosbeak. Pl. 69. f. 33. Bill short, thick, gibbous at the sides, compressed at the point and towards the ridge; both mandibles convex, particularly the upper one, the tip of which overhangs the lower one; nostrils basal, lateral, rounded, very frequently concealed by feathers in front; tarsus shorter than the middle toe; toes divided their whole length; wings short, fourth quill longest; tail slightly rounded or square.

Vidua superciliosa. Supercilious Whidaw Bunting. Pl. 69. f. 32. Bill straight conical, sharp at the point, inflected at the base, ridge of upper mandible raised; slightly bent at the tip; edges of under mandible somewhat inflected; nostrils basal, and partly concealed by feathers in front; tarsus shorter than the middle toe; third and fourth wing-quills longest; central tail quills or rectrices excessively elongated in the males; or the upper coverts are so.

Fringilla elegans. Elegant Linnet. Pl. 68. f. 21. Bill short, strong, straight, conical; upper mandible gibbous, depressed above, and a little bent at the point; nostrils basal, round placed near the forehead, partly concealed by the front feathers; tarsus shorter than the middle toe; toes entirely separated; wings short; third and fourth quills longest; tail varied.

Phytotoma Bloxami. Bloxam's Plant-Cutter. Pl. 69. f. 37. Bill rather short, slightly curved, with the ridge subdepressed, and rounded, base broad, the frontal feathers partly extending over the bill; margins of mandibles sulcated, the upper one widely and the under closely serrated, externally entire; tongue short entire; wings of medium length, first quill rather short, second longer, third, fourth, and fifth longest; feet strong, toes of moderate length, lateral ones equal; neck slender, long, and slightly curved.

Hyreus Abyssinius. Abyssinian Hyreus. Pl. 69. f. 35. Bill conical, thick, straight, somewhat serrated; nostrils ovate; feet with three toes; two before, and a hallux, which is strong, and provided with a hooked claw.

Colias Senegalensis. Senegal Coly. Pl. 69. f. 27. Bill short, thick, conical, a little compressed at the point; mandibles convex, the upper one covering the lower; nostrils basal, lateral, partially concealed by feathers; tail very long, conical; tarsus short; toes separated their whole length; hallux reversible; wings short; third quill longest.

ORDER V.—ZYGODACTYLI.

Bills of different forms, more or less curved, or greatly hooked, frequently straight and angular; feet always with two toes before and two behind, the exterior hind toe often reversible.

Family I. Bill more or less curved; feet with two toes before and generally two behind, the exterior hind toes in some instances reversible.

Musophaga variegata. Variegated Musophaga. Pl. 68. f. 26. Bill short, strong, broad, ridge elevated and arcuated; notched at the point; lower mandible with an angular extremity; nostrils basal, frequently concealed by feathers; less strong, tarsus equal in length to the middle toe; the exterior reversible; lateral toes equal; fourth and fifth wing-quills longest.

Indicator major. Great Honey Guide. Pl. 68. f. 23. Bill short, depressed, sides dilated, slightly bent and notched at the point; ridge distinct; nasal furrow large, nostrils basal, a little tubular; tarsus shorter than the external toe; toes united to the first joint; third wing-quill longest.

Cuculus cupreus. Cupreous Cuckow. Pl. 68. f. 28. Bill as long as the head, compressed and slightly curved; nostrils basal, placed in the margin of the mandible, invested by a naked, prominent membrane; legs feathered lower than the knee; toes united at their base; hind toes entirely divided; the exterior reversible; third quill longest; tail long, more or less graduated.

Coccyzus cæruleus. Blue Cuckoo. Pl. 68, f. 29. Bill rather long, strong, compressed its whole length; slightly arcuated from the base; under mandible straight, sloping at its point; nostrils basal, lateral, half closed by a naked membrane; tarsus slender, much longer than the middle toe; wings short, rounded, first five quills graduated.

Centropus Senegalensis. Senegal Coucal. Pl. 68, f. 30. Bill thick, compressed, deeper than broad, carinated, arcuated towards the point; nostrils basal, lateral, diagonally cleft; tarsus strong, longer than the exterior toe; two anterior toes joined at the base; inner hind toe, with a long subulate claw.

Phœnicophaus pyrrhocephalus. Malcoho. Pl. 68, f. 31. Bill longer than the head, strong, thick, rounded, smooth, arcuated, the base provided with divergent bristles; nostrils remote from the base, lateral and linear, orbits naked, covered with papillæ; tarsus longer than the external toe; wings short.

Leptosomus viridis. African Cuckoo. Pl. 68, f. 32. Bill nearly triangular, laterally compressed, with a prominent ridge, upper mandible a little arcuated, the lower one straight; nostrils in the middle of the bill, half closed by an elongation of the corneous matter; tarsus broad, depressed, covered with rough scales, wings long, fourth quill longest; tail long, equal.

Scythrops Novæ Hollandiæ. New Holland Scythrops. Pl. 68, f. 33. Bill long, convex above, laterally compressed, curved at the point; upper mandible longitudinally grooved; nostrils basal, naked, rounded; orbits naked; tarsus shorter than the middle toe; two external toes united at the base; tail long, rounded.

Saurothera vetula. Long-bellied Cuckoo. Pl. 68, f. 19. Bill longer than the head, slender, laterally compressed, convex above, edges of the upper mandible straight, slightly dentated; point abruptly hooked; nostrils oblong, covered by a membrane; tarsus short, smooth, and annulated; toes slightly attached at the base; hind ones quite free; wings of medium length; bastard wing very short; second and third quills longest; tail with ten feathers.

Pteroglossus maculatus. Spotted-billed Aragou. Pl. 69, f. 18. Bill longer than the head, slender, convex above, externally serrated, and curved at the point; nostrils placed at the bottom of the bill, concealed behind the corneous mass, vertical, orbicular, open; tarsus the length of the external toe; two anterior toes united to the second joint; wings short, concave; the first four quills equally graduated; tail long, graduated.

Ramphastos Aracari. Aracari Toucan. Pl. 69, f. 15. Bill extremely large, convex above, broader than the head at the base, somewhat incurved at the point, both mandibles serrated at the edges; nostrils placed close to the head, concealed behind the base of the bill; vertical, surrounded by a membrane; tarsus as long as the external toe; two anterior toes united to the second joint; tail short.

Crotophaga ani. American keel-bill. Pl. 69, f. 19. Bill short, thick, greatly compressed, carinated above; angulated at the edges; tarsus long, slender, a little longer than the external toe; wings short; tail rounded, consisting of eight broad feathers.

Trogon Pavonius. Quizel. Pl. 67, f. 21. Bill shorter than the head, thick, strong, arcuated above, broader than high, curved towards the point, margins dentated, base beset by long bristles; nostrils basal, open; legs short; tarsus not the length of the external toe; partially covered by feathers; exterior toe reversible; fifth wing-quill longest.

Capito cyanocollis. Blue-necked Barbet. Pl. 68, f. 24. Bill long, straight at the base, broader than deep, upper mandible longer than the under one, curved at the point; nostrils basal, lateral, pierced in the corneous substance, concealed by stiff hairs; tarsus as long as the exterior toe; two middle toes united to the second joint; wings short.

Bucco tamatia. Spotted-bellied Barbet. Pl. 68, f. 27. Bill strong, acute, laterally compressed, covered with strong bristles at the base; upper mandible, emarginate and incurved; nostrils basal, lateral; tarsus shorter than the external toe; anterior toes united to the second joint.

Pogonias erythromelas. Red-throated Pogonias. Pl. 68, f. 34. Bill short, strong, with a prominent arcuated ridge; edge of upper mandible furrowed or smooth, with one or two strong teeth; lower mandible less deep than the upper; nostrils basal, lateral, with strong bristles at the base; tarsus as long as the exterior toe; the two anterior toes united to the second joint.

Psittacus discurus. Racket-tailed Parrot. Pl. 68, f. 35. Bill short, thick, gibbous, very strong, both mandibles convex; greatly bent and hooked at the point; lower mandible short, obtuse; base of bill provided with a cere; head large; nostrils orbicular, open; pierced in the cere; legs short, very strong; tarsus shorter than the exterior toe; internal toes united at their base; tail much varied in different species.

FAMILY II.--BILLS STRAIGHT AND ANGULAR.

Picus Megillanicus. Megellanic Woodpecker. Pl. 68, f. 36. Bill long, or of medium length, straight, angular, cuneated at the tip; nostrils basal, open, covered by setaceous feathers; tongue round, vermiform; legs strong; two toes before and two behind; in some instances one only behind; anterior toes joined at their base; the posterior behind; tail with twelve feathers, the lateral ones very short.

Galbula macroura. Gold and Green Jacmar. Pl. 69, f. 17. Bill long, straight, or slightly bent towards the point, quadrangular and acute; nostrils basal, oval, partly covered by a naked membrane; tarsus shorter than the exterior toe; the fore toes united to the third joint.

Yunx torquilla. Wryneck. Pl. 67, f. 9. Bill short, straight, in the form of a depressed cone; ridge rounded, slender at the point; nostrils basal, naked, and partly closed by a membrane; two first toes united at their insertions; the hind ones divided; tongue long, vermiform, armed at the point with a horny substance; tail with ten soft flexible feathers.

ORDER VI.—ANISODACTYLI.

Bill more or less arcuated, frequently straight; always subulate and slender; feet with three toes before and one behind, external one united at the base to the middle one; hallux generally long, all having long, bent claws.

Oxyrhynchus flammiceps. Bright-billed Oxyrhynchus Pl. 68, f. 41. Bill short, straight; base triangular; point subc late; nostrils basal, lateral, naked; partly covered by a membrane; tarsus short, nearly as long as the middle toe; three toes before, the lateral ones equal, external united at the base, internal separate; fourth and fifth quills longest.

Sitta pusilla, Slender Nuthatch. Pl. 67, f. 17. Bill straight, cylindrical, slightly compressed, point acuminate; nostrils basal, partly concealed by reflected bristles; tongue short, horny; three toes before, exterior joined at its base to the middle one; hallux very long, with a long hooked claw; tail with twelve feathers.

Orthonyx maculatus. Spotted Orthonyx. Pl. 69, f. 40. Bill very short, compressed, nearly straight, notched at the point; nostrils central, open, surmounted by bristles; tarsus longer than the middle toe; claws longer than the toes, laterally furrowed; wings very short; tail long, pointed.

Dendrocolaptes falcirostris. Hookbilled Dendrocolaptes. Pl. 68, f. 40. Bill depressed; base trigonal; straight, or bent; nostrils basal, lateral; tongue short, cartilaginous; exterior toe united to the middle one at the second joint, internal very short, claws hooked and furrowed.

Xenops genibarbis. The Xenops. Pl. 69, f. 39. Bill short, slender, subulate, acute, greatly compressed; nostrils basal, lateral, covered by a naked membrane; lateral toes equal, external one united to the second joint; claws strong, compressed, bent; tail cuneiform.

Anabates leucophrus. White-browed Anabates. Pl. 68, f. 42. Bill straight, shorter than the head, or the same length in some species; compressed, deeper at the base than broad, a little bent at the point, entire; nostrils basal, lateral, oval, partly covered by a feathered membrane; tarsus longer than the middle toe, the exterior toe united to the second joint, and the interior at the base; wings short; shafts of tail feathers weak.

Opetiorhynchus rufus. Reddish Opetiorhynchus. Pl. 68, f. 18. Bill longer than the head, slender, subulate, base depressed, point compressed; tongue short, cartilaginous; nostrils lateral, placed near the base, half closed by a naked membrane; tarsus double the length of the middle toe; lateral toes equal, the exterior united at the base; wings short, first three quills graduated, the third and fourth longest; tail short, slightly graduated.

Certhia maculata. Black and White Creeper. Pl. 67, f. 18. Bill long or of medium length, more or less curved, triangular, compressed, slender; nostrils basal, naked, horizontal, half closed by a membrane; three toes before, the exterior united at its base to the intermediate one; claws greatly hooked, that on the hallux longest; tail graduated, with stiff pointed shafts; fourth wing-quill longest.

Cœreba cyanea. Azure Creeper. Pl. 68, f. 16. Bill slightly arcuated, thick at the base; edges of mandibles inflected, point sharp; upper mandible slightly notched; tongue long, not extensible, bifid, filamentous; tarsus longer than the middle toe; lateral toes equal, tail of medium length.

Trochilus eurynomus. Scaly-backed Humming Bird. Pl. 67, f. 33. Bill generally long, straight, or arcuated, tubular, very slender, base depressed, acuminate; upper mandible nearly concealing the lower one; tongue long, extensible, bifid, tubular; nostrils open in front, covered by a broad membrane; legs very short; tarsus shorter than the middle toe; three anterior toes nearly divided; wings graduated, first quill longest.

Nectarinia melanogaster. Black-breasted Soui-Manga. Pl. 68, f. 37. Bill long, slender, subulate, more or less arcuated, effuse and depressed at the base; mandibles equal, edges of the under reflected, partly concealed by the upper one; tongue long, extensible, tubular, bifid; nostrils situate near the base, lateral, closed above by a naked membrane; tarsus as long, or longer than the middle toe, lateral toes united at their base; wings without the first quill, or with a very short one; third and fourth longest.

Climacteris scandens. Climbing Climacteris. Pl. 68, f. 45. Bill short, subulate, greatly compressed; mandibles equal, acuminate; nostrils covered by a naked membrane; tarsus length of the middle toe, which with the hallux, is very long; claws long, hooked, furrowed at the sides; exterior toe united to the second joint, the anterior to the first joint; third and fourth quills longest.

Tichodroma phœnicoptera. Wall Creeper. Pl. 68, f. 43. Bill very long, cylindrical, slender, slightly arcuated, angulated at the base, depressed at the point; nostrils basal, naked, half closed by an arched membrane; exterior toe joined to the middle one at the base; claw on the hallux very long; tail rounded, feathers with weak shafts.

Upupa epops. Hoopoe. Pl. 67, f. 31. Bill very long, slightly arcuated, slender, triangular, compressed; nostrils basal, lateral, ovoid, open, and surmounted with feathers in front; exterior toe united to the middle one of the first joint; tail square, consisting of ten feathers.

Epimachus Brisbanii. Brisbane's Epimachus. Pl. 68, f. 47. Bill considerably shorter than the head, slender, more or less arcuated, compressed; mandibles acuminate, the upper one slightly notched at the point, and longer than the lower one; gape wide extending to under the eyes; tongue short, cartilaginous; nostrils basal, lateral, open before, half closed by a feathered membrane; legs short; tarsus longer than the middle toe; external toe united to the first joint; fourth and fifth quills longest.

Drepanis vestiaria. Scarlet Drepanis. Pl. 68, f. 38. Bill very long, rounded above, thick and triangular at the base, subulate at the point; upper mandible longer than the under; tongue short, cartilaginous; nostrils half closed above; tarsus double the length of the middle toe; lateral toes equal; third, fourth, and fifth quills longest.

Meliphaga lunulata. Crescent Naped Honey Eater. Pl. 68, f. 44. Bill length of the head, in some species shorter, compressed, somewhat arcuated; emarginate and acute towards the point; nostrils lateral, ovoid, covered by an arched membrane; tongue long, extensible, terminated by cartilaginous filaments; external toes united to the second joint, the internal to the first; hallux long, very strong.

ORDER VII.—ALCYONES.

Bill long, or of medium size; pointed and nearly quadrangular, either slightly arcuated or straight; tarsus very short; three toes united before and one behind.

Merops Bullockii. Bullock's Bee Eater. Pl. 67, f. 32. Bill pointed with acute edges, slightly arcuated; nostrils basal, lateral, ovoid, concealed by protruding hairs; tarsus short; toes united, the exterior to the second joint, and the interior to the first joint of the middle toe; hallux broad at its base; second quill longest.

Alcedo Macleayii. Macleay's Kingfisher. Pl. 68, f. 48. Bill long, straight, quadrangular, acuminate, sharp-edged, and very rarely depressed; nostrils basal, lateral, oblique, nearly closed by a naked membrane; legs short, naked above the knee; exterior toe united to the second joint, interior to the first joint of the middle toe.

Dacelo gigantea. Gigantic Dacelo. Pl. 67, f. 34. Bill thick, strong, quadrangular, conical; mouth gaping to the eyes; upper mandible longest, broadly notched near its point, on each side; nostrils oblong, half closed by a feathered membrane; tarsus shorter than the middle toe; external toe united to the third joint, the internal to the second; wings of medium size.

ORDER VIII.—CHELIDONES.

Bill very short, greatly depressed, and very wide at the base; upper mandible curved at the point; legs short; three toes before, either entirely divided or connected at the base by a short membrane; hallux reversible; claws much hooked; wings long.

Hirundo albicollis. White-necked Swallow. Pl. 70, f. 2. Bill short, triangular, base divaricate, depressed, mouth gaping nearly to the upper mandible, slightly hooked at the point; nostrils basal, oblong, partly closed by a membrane, surmounted by feathers in front; legs short, toes and claws slender, exterior toe united to the first joint of the middle one; wings long, first quill longest; tail generally furcated, and consisting of twelve feathers.

Cypselus melbus. White Bellied Swift. Pl. 70, f. 4. Bill very short, triangular, divaricated, and depressed at the base; gape as far as under the eyes; upper mandible hooked at the point; nostrils placed at the upper part of the bill; longitudinally cleft, open, margins raised, feathered; legs very short, with the four toes directed forwards, entirely divided; toes and claws short, thick; wings very long; tail with ten feathers.

Caprimulgus leopetes. Berbice Goatsucker. Pl. 70, f. 9. Bill very small, slightly curved, depressed at the base, mouth extremely wide; nostrils basal, wide, closed by a membrane, surmounted by feathers; legs short; anterior toes united to the first joint; middle claw long, serrated on the edge, but smooth in some of the foreign species; hallux reversible; tail round or forked, consisting of ten feathers.

Podargus humeralis. Cold-River Night Jar. Pl. 70, f. 7 Bill broader than the head, abruptly acuminate, and deflexed at the tip; upper mandible spatuliform, arcuated; surrounded by stiff bristles; basal, nostrils linear, hidden by a bristled membrane; wings shorter than the tail; toes entirely divided; claws nearly equal.

ORDER IX.—COLUMBÆ.

Columba aromatica. Aromatic Pigeon. Pl. 67, f. 29. Bill of medium size, strait at the base, tip, or horny point, compressed and deflected; base of upper mandible covered by a soft skin, in which the nostrils are situate, towards the middle of the bill; point more or less curved; feet with three entirely separated toes in front, and one behind; claws short, blunt, strong; wings of medium length, acuminate; first quill rather shorter than the second, which is the longest.

Lophyrus coronatus. Crowned Pigeon. Pl. 67, f. 24. Bill straight, rather compressed, swelling a little at the point; upper mandible with a furrow, bent at the tip; lower mandible grooved, short, swelling at the point, and somewhat reflected; nostrils small, orbicular, situate in a groove; tarsus long, strong, covered with round scales; anterior toes united at the base by a small membrane; tail with twelve feathers.

ORDER X.—GALLINÆ.

Bill short, convex in some genera, covered by a cere; upper mandible arcuated from its base, in some species, bent only at at the point; nostrils lateral, covered by a membrane, naked or surmounted by feathers; tarsus long; three anterior toes, united at their base by a membrane; hallux articulated on the tarsus above the junction of the anterior toes.

Pavo muticus. Japan Peacock. Pl. 70, f. 5. Bill convex above, thick, bent towards the point, naked at the base; nostrils placed near the ridge, a little from the base, open; cheeks partially naked; tarsus longer than the middle toe, with a conoid spur; head crested; tail consisting of eighteen feathers, elongated, broad, capable of being expanded, like a fan.

Euplocomus ignitus. Macartney's Cock. Pl. 70, f. 3. Bill long, slightly arcuated from its base, where it is somewhat divaricate; nostrils placed towards the centre, and near the ridge, skin of the nostrils stretching backwards, covering the sides of the head; tarsus longer than the middle toe, nails short, strong; tail generally bifurcated and large, with the feathers broad and pointed.

Gallus furcatus. Fork-tailed Cock. Pl. 70, f. 22. Bill of medium size, strong, and naked at the base, upper mandible arcuated, convex, bent towards the point; head surmounted by a fleshy crest: ears naked; three anterior toes united to the first joint; hallux raised from the ground; tarsus provided with a long and bent spur; middle feathers of the tail arcuated; wings short.

Phasianus versicolor. Diard's Pheasant. Pl. 70, f. 10. Bill short, thickened, naked at the base, bent towards the point; nostrils basal, lateral; cheeks naked, warty; ears covered; anterior toes united to the first joint; tarsus with spurs in the males, tail elongated, cuneiform, composed of eighteen feathers; wings short.

Lophophorus impeyanus. Impeyan Lophophorus. Pl. 70, f. 6. Bill long, thick, greatly arcuated, broad at the base; upper mandible arched; very long, extending considerably beyond the under one, edged at the point; ridge elevated; nostrils basal, lateral, half closed by a thinly feathered membrane; tarsus covered with feathers above, and provided with a long, sharp spur; anterior toes united by a membrane; hallux elevated; tail short, rounded; head with a crest.

Tragopan satyrus. Nepaul Tragopan. Pl. 70, f. 24. Bill of medium size, slightly arcuated from its base; nostrils a little way from the base of the bill, and nearly central; from the base of the lower mandible is suspended a loose pendent skin, susceptible of inflation; face naked; behind each eye a slender horn-like process; tarsus in both species armed with a spur; tail rather short.

Polyplectron emphanum. Crested Polyplectron. Pl. 70, f. 13. Bill of medium size, straight, slender, compressed; upper mandible bent towards the point; nostrils placed in the middle of the bill, lateral, half closed by a naked membrane; orbits and cheeks naked; tarsus long, slender, and in the males furnished with two or more spurs; anterior toes united by a membrane; hallux elevated; tail, long, rounded.

Meleagris ocellata. Honduras Turkey. Pl. 70, f. 15. Bill short, thick, base covered with a naked skin; head and upper part of the neck furnished with a naked tuberculated skin; a loose, pendent caruncle on the upper part of the bill; throat provided with a longitudinal, pendulous, caruneulated wattle; tarsus of the male with a spur; wings short, consisting of eighteen feathers, spreading into a circle.

Argus giganteus. Argus Pheasant. Pl. 70, f. 8. Bill as long as the head, straight, compressed; base naked; upper mandible arcuated, bent towards the point; nostrils lateral, situate in the middle of the bill; half closed by a membrane; head, cheeks, and neck, naked; tarsus slender, smooth; anterior toes united by a membrane; hallux joined on the tarsus; tail ascending, compressed, consisting of twelve feathers, two central ones greatly elongated.

Numida cristatus. Crested Pintado. Pl. 70, f. 11. Bill short, thick, arcuated, base covered by a warted membrane; a carunculated wattle suspended from the under mandible; nostrils placed in the cere, divided by a cartilage; head naked or feathered, crown provided with a callous horn or crest; tarsus smooth; anterior toes united by a membrane; hallux attached to the tarsus; tail short, bent down.

Pauxi galeata. Galeated Curassow. Pl. 70, f. 1. Bill short, strong, arcuated, convex, compressed; base of the upper mandible corneous, dilated; nostrils basal, lateral, open below; tarsus long, smooth; anterior toes united by a membrane; hallux articulated to the tarsus, partially touching the ground; wings short.

Crax alector. Crested Curassow. Pl. 70, f. 12. Bill long, thick, sides compressed, point incurved, base covered by a cere; nostrils lateral, situate in the cere, half covered, open in front: crown ornamented with revoluted plumes; three anterior toes united at their base; tail broad, pendent.

Penelope marail. Marail. Pl. 70, f. 14. Bill medium sized, broader than deep, point compressed and bent; nostrils lateral, ovate, half covered by a membrane, open in front; cheeks naked; throat with a longitudinal wattle, the centre carunculated; tarsus reticulated; anterior toes united by a membrane; hallux articulated on the same level; wings short.

Tetrao Canadensis. Spotted Grouse. Pl. 70, f. 18. Bill short, thick, arcuated above, convex, bending towards the point, base naked; nostrils basal, half closed by an arched scale above, and concealed by small feathers; eyebrows naked, with scarlet warts; tarsus feathered: toes united to the first joint; hallux margined with asperities.

Lagopus Saliciti. Willow Ptarmagan. Pl. 70, f. 17. Bill very short, base invested by feathers; upper mandible convex, and bent towards the point; nostrils basal, lateral, partly closed by an arcuated membrane, and almost concealed by close-set feathers at the base of the bill; eyebrows naked; furnished with a fleshy comb; wings short, concave, third and fourth quills longest; tail generally square at the extremity; tarsus and toes completely feathered, hallux very short, and hardly touching the ground with the point of the nail; nails long, and nearly straight.

Pterocles arenarius. Banded Sandgrouse. Pl. 70, f. 19. Bill of medium length, compressed, and slender, in some species; upper mandible straight, bent slightly towards the point; nostrils basal, half closed by a membrane; toes short, united to the first joint; hallux very small, articulated high on the tarsus; fore part of tarsus feathered, back part naked; tail conical, in some species the two central feathers are elongated and filiform; wings long, acuminate, first quill longest.

Syrrhaptes Pallasii. Pallas's Sandgrouse. Pl. 70, f. 27. Bill short, conical, slender; upper mandible slightly bent, with a groove along the ridge; nostrils basal, lateral, covered by feathers in front; feet with three toes only, directed forwards, and united their whole length; tarsus and toes covered with woolly feathers; tail conical, two central feathers elongated, and filiform; as also the first and second quills.

Ortyx neoxenus. Welcome Quail. Pl. 70, f. 16. Bill very short, thick, highly arched; nostrils basal, half closed by an arcuated membrane; tarsus longer than the middle toe; toes united by a membrane to the first joint; tail long, cuneiform and rounded at its extremity.

Perdix picta. Painted Partridge. Pl. 70, f. 20. Bill short, compressed, strong, base naked; upper mandible arcuated, convex, much curved at the point; nostrils basal, lateral, half closed by an arcuated, naked membrane; toes united by a membrane to the first joint; tail with fourteen or eighteen feathers, short, rounded, and slanting downwards; wings short.

Cryptonyx coronatus. Crowned Cryptonyx. Pl. 70, f. 26. Bill short, thick, compressed, mandibles of equal length, upper one straight, a little bent at the point; nostrils lateral, longitudinally cleft, placed near the middle of the bill, covered above by a broad, naked membrane; tarsus long; toes united at their base by a membrane; hallux not touching the ground, destitute of a claw; wings short.

Tinamus sylvicolas. Barred Tinamoo. Pl. 70, f. 31. Bill straight, slender, depressed; broader than deep, point rounded, ridge distinct, forming a large nasal furrow, in which the nostrils are placed laterally; tarsus long, often with asperities behind; toes short, entirely divided; hallux very short; tail very short, or none; wings short.

T. rufescens. Guaza. Pl. 70, f. 32.

Hemipodius tachydromus. Andalusian Turnix. Pl. 70, f. 29. Bill straight, slender, much compressed, with an elevated ridge, and curved towards the point; nostrils lateral, linear, partly closed by a naked membrane; tarsus long; three anterior toes, but destitute of a hallux; tail feathers slender, concealed by the upper coverts; first quill longest.

ORDER XI.—ALECTORIDES.

Bill shorter than the head, or of the same length; strong; upper mandible convex, frequently hooked at the point; tarsus long, slender, three toes before, and one behind; hallux articulated higher on the tarsus than the toes.

Psophia crepitans. Golden-breasted Trumpeter. Pl. 70, f. 30, and pl. 71, f. 37. Bill short, conical, curved, greatly bent at the point; upper mandible longer than the under; nasal furrow wide, extended; nostrils situate near the centre of the bill, wide, diagonal, closed behind by a naked membrane; legs long, slender, middle and exterior toe united, the interior separated; hallux articulated interiorly, and on a level with the toes; wings short, concave; tail very short.

Dicholophus cristatus. Crested Dicholophus. Pl. 67, f. 27. Bill longer than the head, thick, arcuated; gape wide, extending to the eyes, depressed at the base, compressed, and slightly hooked at the point; nasal furrow large; nostrils small, covered by a membrane; legs long, slender; toes very short and thick, united at the base by a membrane; hallux articulated to the tarsus, and not touching the ground; claws short, strong; wings destitute of spines.

Glareola isabella. White-throated Glareola. Pl. 70, f. 33. Bill short, convex, tip compressed; upper mandible curved half its length; nostrils basal, lateral, obliquely cleft; legs feathered to the knee; tarsus long, slender, exterior toe united to the middle one by a short membrane, the inner toe quite separate; hallux articulated on the tarsus; claws long, subulate; wings very long.

Palamedea cornuta. Horned Screamer. Pl. 70, f. 35. Bill short, conically convex, greatly curved at the point, compressed its whole length; nasal furrow large; head small, covered with down, armed with a slender and flexible horn; nostrils remote from the base of the bill, lateral, oval, open; legs short, thick; toes very long, lateral one connected with the centre toe by a short membrane; wings ample, and spurious, wings provided with spurs.

Chauna chavaria. Faithful Jacana. Pl. 70, f. 28. Bill shorter than the head, conico-convex, slightly arcuated, curved at the tip; base provided with small feathers; lores naked; nostrils oblong; legs long, slender; toes long, united by a membrane; wings furnished with two spurs.

ORDER XII.—CURSORES.

Bill of medium size; legs long, naked above the knee; feet with only two or three toes, directed forwards.

Struthio camilus. Ostrich. Pl. 67, f. 38. Bill straight, obtuse, depressed, angulated and rounded at the point; mandibles equal and flexible; nostrils near the middle of the bill; legs very long, strong, muscular, with only two toes directed forwards, the inner one much the shortest, and provided with a large blunt claw; tibia very fleshy to the knee; wings short, unfit for flight, composed of long, soft, flexible feathers, and armed with a double spur.

Rhea Americana. American Ostrich. Pl. 70, f. 25. Bill straight, short, soft, base depressed, tip slightly compressed, and obtuse; lower mandible greatly depressed, flexible, and rounded at the tip; nostrils large, longitudinally cleft, open, placed on the lateral surface of the bill; legs long; feet with three anterior toes, and a callosity behind; wings short, feathers more or less long, a spur on the tip of the spurious wing.

Dromiceus Novæ Hollandiæ. Emu. Pl. 67, f. 37. Bill straight, edges greatly depressed, tip rounded; head feathered; throat naked; feet with three anterior toes; wings very short.

Casuarius galeatus. Galeated Casuary. Pl. 70, f. 23. Bill straight, short, compressed, rounded towards the point, with a keeled ridge, and the base provided with a bony, rounded protuberance; under mandible soft, flexible, and angular near the extremity; nostrils round, placed in the lateral part of the point of the bill; legs muscular, feet with three anterior toes, inner short, armed with a long and strong claw; tibia almost entirely covered with feathers; wings short, not adapted for flight.

Otis tetrax. Little Bustard. Pl. 70, f. 34. Bill straight, conical, compressed; tip of upper mandible slightly arched; nostrils remote from the base, open, oval, and approximate; legs long, naked above the knee, three short anterior toes, united at their base, and bordered by a membrane; wings of medium length, third quill longest.

Cursorius Asiaticus. Coromandel Courier. Pl. 70, f. 21. Bill shorter than the head, depressed at the base, curved and acuminate towards the point; nostrils oval, surrounded by a small protuberance; legs long, slender; feet with three anterior short toes, entirely divided, interior one shortest; claws very small; second wing-quills longest.

ORDER XIII.—GRALLATORES.

Bill variously shaped, generally straight, in the form of an elongated cone, compressed, rarely depressed, legs slender, long, more or less naked above the knee; three anterior, and one posterior toe or hallux, which is united on a level with the front toes, or more elevated.

Family I.—With three Toes only.

Œdicnemus crepitans. Thick Knee. Pl. 71, f. 5. Bill longer than the head, straight, strong, tip compressed, ridge carinated; under mandible forming an angle with the upper; nostrils placed in the middle of the bill, cleft longitudinally, open in front; legs long, slender; three anterior toes united to the second joint by a membrane, which extends along the toes; tail cuneiform.

Calidris arenaria. Sanderling. Pl. 71, f. 3. Bill of medium size, slender, straight, soft, flexible, compressed from the base, and depressed towards the tip, flattened and obtuse; nostrils lateral, longitudinally cleft; legs slender; anterior toes almost entirely divided; wings middle-sized, first quill longest.

Falcinellus pygmæus. Pigmy Curlew. Pl. 71, f. 9. Bill arcuated, soft, compressed its whole length, depressed at the point; nasal furrow elongated; nostrils basal, linear, lateral; tarsus longer than the middle toe; feet with three anterior toes only.

Himan'opus nigricollis. Black-necked Longshank. Pl. 71, f. 2. Bill long, slender, cylindrical, base depressed, point compressed; half of mandibles channelled; nostrils lateral, linear, long; legs very long and slender; three anterior toes, middle one united to the exterior by a broad membrane, and to the interior by a rudimentary one; claws very small, flat; wings very long, first quill considerably the longest.

Hæmatopus ater. Black Oyster-catcher. Pl. 71, f. 4. Bill long, strong, compressed, point much flattened and cuneated; nostrils lateral, longitudinally cleft in the channel of the bill; legs strong, muscular; three anterior toes, the middle one united to the first joint, interior one margined by a rudimentary membrane; wings medium-sized, first quill longest.

Charadrius vociferus. Kildeer Plover. Pl. 72, f. 7. Bill shorter than the head, slender, straight, compressed; mandibles gibbous towards the point; nostrils longitudinal, placed in the membrane which covers the nasal furrow; legs slender; three anterior toes, exterior connected to the middle one by a short membrane, the interior divided; tail slightly rounded or even; wings medium size, second quill longest.

Family II.—With Four Toes.

Vanellus albicapillus. White-crowned Lapwing. Pl. 71, f. 1. Bill short, straight, slender, compressed, point gibbous; nostrils lateral, longitudinally cleft; legs slender, three anterior toes, and one behind, exterior connected to the middle one by a short membrane, hallux almost obsolete, or very short; not touching the ground; wings elongated.

Stripsilas collaris. Turnstone. Pl. 72, f. 5. Bill medium-sized, strong, straight, slightly inclined upwards, ridge depressed, point truncated; nostrils basal, lateral, half closed by a membrane; a short naked space above the knee; anterior toes connected at the base by a very short membrane; hallux articulated to the tarsus; wings acuminate.

Grus torquata. Collared Crane. Pl. 72, f. 6. Bill as long, or longer than the head, strong, straight, compressed, point obtuse; lateral base of mandible deeply sulcated, ridge elevated; nostrils central, closed behind by a membrane; region of the eyes and base of the bill naked and papillous, or covered with feathers; legs long, with a large naked space above the knees; the middle toe united to the exterior one by a rudimentary membrane; the interior toe divided: hallux articulated higher on the tarsus.

Anthropoides virgo. Numidian Crane. Pl. 72, f. 1. Bill the length of the head, compressed, entire, thick, convex, and furrowed near the point; nostrils concave, ovoid, open, situate in the ridge of the bill, covered behind by a membrane; tarsus long, smooth, and slightly reticulated; three anterior toes united at the base by a membrane, interior one free; wings long, first, second, and third quills longest, second prolonged beyond the first.

Aramus scolopaceus. Scolopaceous Heron. Pl. 72, f. 4. Bill somewhat longer than the head, straight, hard, and bending slightly at the point; lower mandible a little tumid before, and concave behind, angular, and pointed; nostrils lateral, remote from the base of the bill; legs long, strong; anterior toes quite divided; hallux long, resting on the ground; nails long, bent; wings medium-sized, third quill longest.

Ardea purpurea. Purple Heron. Pl. 71, f. 6. Bill as long, or longer than the head, strong, straight, compressed, accuminate; upper mandible slightly sulcated; ridge rounded, nostrils basal, lateral, longitudinally cleft in a groove, half closed by a membrane; orbits and lores naked; legs long, slender, with a bare space above the knee; exterior toe united to the middle one by a short membrane; claws long, compressed, that of the middle toe interiorly dentated.

Ardea garzetta. Egret. Pl. 72, f. 3.

Botaurus exilis. Least Bittern. Pl. 72, f. 8. Bill same length, or longer, than the head, strong, higher than broad; mandibles of equal length, upper somewhat deeper than the under one, sulcated two-thirds its length, gently curving from the base to the point; ridge broad, flat at the base, but becoming narrow and rounded from before the nostrils to the tip: under mandible strong, tapering to the point; edges inflected, very sharp, and finely serrated near the tip; nostrils basal, linear, longitudinal, placed in a furrow, partly covered by a naked membrane; legs of medium length; toes long, slender unequal; wings long, rounded; three first quills longest.

Nycticorax violacea. White-crowned Night-heron. Pl. 72, f. 10. Bill very strong, rather longer than the head, compressed, upper mandible arcuated, and slightly bulging towards the base, sulcated three-fourths its length, emarginated; ridge rounded; nostrils basal, longitudinal, placed in the furrow, covered by a naked membrane; lores and orbit naked; legs of medium length, slender, exterior toe united to the middle one by a membrane, as far as the first joint, claws short, falcated, that of the middle toe pectinated; tibia naked for a short space above the knee; first quill shorter than the second, third longest.

Ciconia alba. White Stork. Pl. 71, f. 7. Bill long, straight, strong, acutely conical; ridge rounded, of equal height with the head; under mandible slightly bent upwards; nostrils nearly basal, longitudinal, placed in the groove; region of the eyes naked; legs long; three anterior toes united to the first joint, hallux articulated on the same level; wings of medium size.

Argala gigantea. Gigantic Adjutant. Pl. 72, f. 12. Bill greatly longer than the head, form of an elongated cone, slightly curved from the base, which is as thick as the head, tapering to an obtuse point; ridge but little elevated; nostrils ovate, situate near the base of the bill; head and neck divested of feathers: neck with a long, naked, fleshy appendage; legs long; tibia wholly naked; feet with three anterior toes united by a scolloped membrane; hallux rather long, resting on the ground; wings of medium length, first quill longest.

Mycteria Senegalensis. Senegal Jabiru. Pl. 72, f. 2. Bill very long, thick, smooth, laterally compressed, acute; both mandibles inclining upwards; upper mandible trigonal, lower mandible more thickened; nostrils longitudinal, narrow, remote from the base of the bill; legs long, strong; three quarters of the tibia naked; three anterior toes slightly united at their base by a membrane; hallux articulated high on the tarsus, with its point resting on the ground; wings long, third, fourth, and fifth quill longest.

Anastomus Coromandalinus. Coromandel Anastomus. Pl. 72, f. 14. Bill thick, greatly compressed, gaping towards the middle; upper mandible denticulate on the margins, furrowed at the base, nostrils linear; legs long, slender; three anterior toes united by a short membrane; hallux articulated on the same level as the toes.

Scopus Umbretta. Tufted Umbre. Pl. 72. f. 20. Bill compressed, soft, inclining at its point; upper mandible surmounted its whole length by a projecting ridge, and grooved; nostrils oblique; tarsus longer than the middle toe; exterior toe united to the middle one, length of first joint; hallux resting on the ground.

Phœnicopterus ruber. Red Flamingo. Pl. 71, f. 8. Bill thick, strong, deeper than broad; upper mandible nearly straight for about half its length, where it is slightly arcuated, and from whence it suddenly bends downwards to within two-thirds its length, where it is abruptly hooked, and terminates with a lanceolate point; the under edge corresponds somewhat in form with the upper side, where it is sharp and cutting; ridge notched; under mandible envelops the upper; nostrils oblong, ovate, longitudinal, placed near the base of the bill; legs very long, the anterior toes webbed to their points; hallux small, articulated high on the tarsus; wings of medium size, second quill longest.

Recurvirostra Americana. American Avoset. Pl. 71, f. 10. Bill very long, slender, weak, depressed its whole length, flexible, undulated, turned up at the point; upper mandible longitudinally channelled on its surface, under one laterally; nostrils linear, long; legs long, slender; anterior toes united by a membrane as far as the second joint; hallux very short, articulated high on the tarsus; wings acuminate, first quill longest.

Cancroma cochlearia. Crested Boat-bill. Pl. 72, f. 11. Bill longer than the head, greatly depressed; broader than deep, dilated towards the middle; ridge prominent, grooved on each side, in which the oblique nostrils are situate; upper mandible in the form of a boat reversed, the lower one acuminate; anterior toes united at their base; hallux on a level with the toes.

Platalea agaga. Roseate Spoonbill. Pl. 71, f. 11. Bill very long, greatly depressed, much dilated, and spatuliform towards the point; upper mandible channelled, and transversely sulcated at the base; nostrils approximated, oblong, open, bordered by a membrane; face and head wholly or partially naked; legs long; anterior toes united the length of the second joint by deeply indented membranes; hallux long, resting on the ground.

Tantalus loculator. Wood Ibis. Pl. 71, f. 12. Bill very long, nearly straight, laterally compressed, destitute of a nasal furrow, base as thick as the head, short, and curved at the tip; upper mandible arcuated; sides dilated, tip compressed, cylindrical, and slightly notched; under mandible equal with the upper one, inflected at the base, and slightly bent towards the tip; both mandibles greatly inflected, and sharp; face destitute of feathers; nostrils longitudinal, oblong, cleft in the horny substance; tarsus double the length of the middle toe; toes united by a broad scalloped margin; hallux long, resting on the ground; wings long, first and second quills longest.

Ibis ruber. Scarlet Ibis. Pl. 71, f. 21. Bill long, slender, arcuated, broad at the base, tip depressed, obtuse, rounded; upper mandible deeply furrowed; nostrils almost basal, situate near the upper part of the bill, oblong, straight, placed in the membrane which covers the furrow; face, and in some species, part of the head and neck naked; legs naked above the knee; toes united as far as the first joint, hallux long, the point reaching the ground.

Numenius phæopus. Wimbril. Pl. 71, f. 13. Bill strong, arcuated, compressed, point hard, and slightly obtuse; upper mandible projecting beyond the lower, rounded at the point, and channelled three-fourths of its length; nostrils lateral, linear, pierced in the furrow; face feathered; legs slender, naked above the knee, toes united by a membrane to the first joint; hallux articulated to the tarsus, and touching the ground.

Tringa alpina. Dunlin. Pl. 71, f. 14. Bill medium-sized, long in some species, slightly arcuated, curved, or straight at the point, soft, flexible, base compressed; point depressed, dilated, obtuse; both mandibles channelled near their extremities; nostrils lateral, conical, placed in the membrane which covers the furrow; legs slender, naked above the knee; toes entirely divided; in a few species the exterior and middle toes are connected by a membrane; hallux articulated to the tarsus.

Totanus semipalmatus. Semipalmated Sandpiper. Pl. 71, f. 15. Bill medium length, straight, compressed, but rarely recurved, base soft, tip hard, sharp, and acuminate; mandibles furrowed at the base, upper one bent down at its extremity on the under; nostrils linear, longitudinally cleft in the furrow; legs long, slender, naked above the knee; middle toe united to the outer by a membrane, which in some species extends to the second joint.

Limosa fedoa. Marbled Godwit. Pl. 72, f. 17. Bill very long, more or less recurved, soft, flexible, depressed towards the point; both mandibles longitudinally channelled; point dilated, obtuse; nostrils lateral, longitudinally cleft in the groove; legs long, slender; a large naked space above the knee; exterior toe united to the middle one by a membrane to the first joint; hallux articulated on the tarsus.

Scolopax Wilsonii. Wilson's Snipe. Pl. 71, f. 19. Bill long, straight, compressed, slender, soft, tip tumid, and hooked; both mandibles channelled half their length, the point of the upper one projecting beyond that of the under; nostrils basal, lateral, longitudinally cleft near the edge of the mandibles, and covered by a membrane; legs slender, with a small naked space above the knee; toes entirely divided; the exterior and middle one rarely united.

Rynchœ variegatus. Variegated Snipe. Pl. 71, f. 18. Bill longer than the head, gibbous towards the point, greatly compressed, inflected, upper mandible furrowed throughout, the under one at the point only; nasal furrow reaching the middle of the bill; tongue as long as the bill, acute; nostrils linear; tarsus longer than the middle toe; toes entirely divided; hallux articulated on the tarsus.

Eurypyga Helias. Variegated Helias. Pl. 71, f. 16. Bill long, straight, hard, compressed, point a little tumid; nasal furrow very deep; lower mandible sulcated at the sides; point notched; nostrils basal, linear, long; legs long, slender, tarsus longer than the middle toe; external toe united by a membrane, internal divided, all provided with membranaceous borders; hallux on a level with the toes; tail very long.

Rallus Virginianus. Virginian Water-rail. Pl. 72, f. 19. Bill longer than the head, slender, slightly arcuated, or straight, compressed at the base, cylindrical at the point; upper mandible channelled; nostrils lateral, longitudinally cleft in the furrow, half closed by a membrane; legs long, strong, a small naked space above the knees; toes entirely divided; hallux articulated to the tarsus; wings rounded, third and fourth quills longest.

Gallinula Martinico. Martinico Gallinule. Pl. 71, f. 17. Bill shorter than the head, compressed, conical, base deeper than broad; ridge advancing on the forehead; points of both mandibles compressed, of equal length; upper slightly bent, the lower one forming an angle; nostrils longitudinally cleft, lateral, placed in the middle of the bill, half closed by a membrane; legs long, naked above the knee; toes long, divided, and provided with a narrow edging.

Parra ænea. Bronzed Jacana. Pl. 71, f. 38. Bill as long as the head, straight, slender, compressed; somewhat inflected towards the tip, base depressed, dilated in front into a naked plate, or elevated crest; mandibles unequal; nostrils oval, lateral, situate near the middle of the bill; legs very long, slender; tibia with a long naked space; toes very long, slender, entirely divided; wings ample.

Porphyrio tavoua. Martinico Porphyrio. Pl. 72, f. 15. Bill strong, hard, thick, conical, nearly as deep as long, shorter than the head; upper mandible dilated, and depressed as it approaches the head; nostrils lateral, placed in the horny substance, nearly round and pervious; legs long, strong; toes in some species very long, quite divided; edged with a very narrow membrane.

ORDER XIV.—PINNATIPEDES.

Bill straight, of medium size; upper mandible slightly curved at the tip; legs middle-sized; tarsus slender, or compressed; three anterior and one hind toe, which is anteriorly articulated on the tarsus.

Fulica Americana. American Coot. Pl. 71, f. 20. Bill of medium size, strong, straight, conical, compressed, much deeper than broad at the base; ridge projecting in front, and dilated into a naked plate; mandible of equal length, the upper slightly curved, dilated at the base, lower one forming an angle; nostrils lateral, placed in the middle of the bill, longitudinally cleft, half closed by a membrane; legs long, slender, naked above the knee; toes long, united at their base with scolloped membranes along their sides. *Uria triole.* Foolish Guillemot, pl. 71, f. 27.

Podoa Senegalensis. Senegal Podoa. Pl. 72, f. 23. Bill as long as the head, cylindrical, straight, acuminate; point notched; ridge distinct, nasal furrow large; nostrils lateral, and nearly central; legs short, placed very far back; tarsus rounded; toes united by a lobed membrane; hallux smooth; tail very broad.

Phalaropus Hyperboreus. Hyperborean Phalarope. Pl. 72, f. 62. Bill long, straight, slender, weak, depressed at the base, mandibles channelled to the point; tip of the upper bent down on the lower, obtuse, point of the lower one subulate; nostrils basal, lateral, oval, prominent, surrounded by a membrane, legs medium-sized, slender, tarsus compressed; toes connected to the first joint, from whence they are provided with scolloped serrated membranes; hallux destitute of a membrane.

Podiceps cornutus. Horned Grebe. Pl. 72, f. 18. Bill medium-sized, straight, compressed, hard, in the form of an elongated, acuminated cone; upper mandible slightly inclined at the point; nostrils lateral, concave, oblong, closed behind by a membrane; legs long, open in front, pervious, placed far backwards; tarsus greatly compressed; toes much flattened, provided with a simple lobe; hind toe compressed and scalloped; claws broad, very flat; wings short, destitute of a tail. *P. cristatus.* Crested Grebe, pl. 71, f. 24.

ORDER XV.—PALMIPEDES.

Bill variously formed; legs short, placed more or less backwards; anterior toes wholly or partially connected by webs; in some families all the toes are united by one membrane; hallux articulated interiorly to the tarsus, or wanting in some genera.

Cereopsis cinereus. New Holland Cereopsis. Pl. 72, f. 16. Bill very short, strong, depth at the base nearly equal to its length, covered by a cere, prolonged towards the point, which is arcuated and truncated; nostrils open, placed in the middle of the bill; tarsus longer than the middle toe; toes palmated, with deeply notched membranes; hallux long, articulated to the tarsus; claw thick, strong; wing coverts nearly as long as the wings.

Chionis necrophagus. White Sheathbill. Pl. 71, f. 44. Bill strong, conico-convex, compressed, inclining towards the point, hard; base of the upper mandible covered by a movable corneous sheath, with longitudinal furrows; nostrils marginal, placed in the middle of the bill, on the edge of the corneous substance; naked part of the tibia small; middle and exterior toes semipalmated, anterior one united only at the base, all provided with a rudimentary border; wings tuberculated.

Rynchops flavirostris. Yellow-billed Skimmer. Pl. 71, f. 33. Bill long, straight, compressed into a blade-like form, truncated at the apex; upper mandible much shorter than the under one; nostrils remote from the base, lateral and marginal; tarsus slender, longer than the middle toe; toes united by a membrane; hallux articulated to the tarsus; tail bifurcated, shorter than the wings.

Sterna minuta. Lesser Tern. Pl. 71, f. 32. Bill as long, or longer than the head, nearly straight, compressed, slender, edged and acuminate; mandibles of equal length, upper slightly inclining towards the tip; nostrils placed in the middle of the bill, longitudinally cleft, pervious; legs small, naked above the knee; tarsus very short, toes connected by a membrane, hallux detached; wings very long and pointed; tail somewhat forked.

Larus glauca. Burgomaster Gull. Pl. 71, f. 40. Bill long, or medium-sized, strong, hard, compressed, edged, bent towards the point; lower mandible angulated near the tip; nostrils lateral, situate in the middle of the bill, longitudinal, straight, pervious; legs slender, naked above the knee, tarsus long, toes webbed to the tips; hallux free, short, articulated high on the tarsus; wings long; tail equal.

Lestris Richardsonii. Richardson's Skua. Pl. 71, f. 43. Bill medium-sized, cylindrical, strong, hard, sharp-edged, compressed, hooked at the point; upper mandible covered with a cere as far as the horny tip, the lower angulated; nostrils placed immediately behind the horny tip or dertrum, diagonal, narrow, pervious, closed behind; legs slender, naked above the knees; tarsus long; toes completely webbed, hallux very small, and on a level with the toes; claws large, greatly hooked, tail slightly rounded, central feathers elongated.

Procellaria obscura. Diving Petrel-Puffin. Pl. 72, f. 24. Bill as long, or longer than the head, edged, very hard, base dilated; point compressed, arcuated, channelled, abruptly inflected towards the point; nostrils prominent at the surface of the bill, united and concealed by a tube, presenting either a double or single aperture; legs medium-sized, frequently long, slender, with the tarsus compressed; toes long, entirely webbed, hallux represented by an acuminate claw; wings long.

Thalassidroma Wilsonii. Wilson's Storm-Petril. Pl. 71, f. 39. Bill shorter than the head, greatly compressed in front of the nasal sheath, point of upper mandible abruptly hooked. that of the lower one slightly angulated, following the curve of the upper; nostrils situate in a sheath, with two apertures in front; tarsus long, slender; toes united by a membrane, exterior and middle ones nearly of equal length, and longer than the interior; hallux represented by a small straight nail; wings long, acuminate, first quill shorter than the third, second longest; tail square, or slightly forked.

Pachyptila Fosteri. Foster's Pachyptila. Bill thick, strong, greatly depressed, very broad; upper mandible gibbous at the sides, interior margin provided with cartilaginous plates; ridge distinct, compressed, point hooked; nostrils basal, placed in a tube, exhibiting two apertures; toes united by a deeply cut membrane; hallux represented by a claw.

Halidroma Urinatrix. Diving Halidroma. Bill short, straight, compressed, margined, longitudinally furrowed, tip hooked; lower mandible with a small, dilatable, naked pouch; nostrils distinct, base concealed under a tube; legs short; feet with three anterior palmated toes only; wings short.

Diomedea exulans. Wandering Albatross. Pl. 72, f. 22. Bill very long, strong, margined, compressed, straight, suddenly curved; upper mandible channelled on the sides, greatly hooked at the point, under one smooth, truncated at the tip; nostrils remote from the base, lateral, tubular, covered on the sides, open in front; legs short; feet with three long, webbed toes only, lateral one margined; wings very long and narrow; quills short, secondaries long.

Anas bochas. Mallard. Pl. 71, f. 35. Bill longer than the head, depressed; broad, straight from the nostrils to the point; mandibles with tooth-like laminæ, those of the upper mandible hardly projecting beyond the margin; nostrils nearly basal, lateral; wings of medium length, acuminate, toes webbed, hallux free; tail short, slightly cuneiform; middle feathers curled up in some species.

Merica Americana. American Wigeon. Pl. 72: f. 36. Bill shorter than the head, higher than broad at the base; strait from the nostrils; depressed and narrowed towards the point, which is armed with a medium-sized hooked nail; mandibles with lamelliform teeth, points slightly projecting beyond the margins, in the centre of the bill; nostrils almost basal, lateral, small, oval, pervious; three anterior toes united by a membrane; hallux with a narrow web, resting with its tip on the ground; wings acuminate; tail wedge-shaped, acute, consisting of fourteen feathers.

Chauliodus strepera. Gadwell. Pl. 72, f. 30. Bill length of the head, depressed, as broad as high at the base, rather narrowing towards the tip, which is provided with a small nail, both mandibles acuminate, those of the upper one projecting beyond the margins; nostrils nearly basal, lateral, oval, and pervious; toes webbed; hallux small and free.

Dendronessa Sponsa. Summer Duck. Pl. 72, f. 38. Bill shorter than the head, considerably narrowed towards the tip, height at the rictus greater than its width; its frontal angles prolonged, mandibles strongly teethed; nail on the tip robust, arched or hooked; nostrils large, pervious, lateral; forehead sloping, tarsus length of middle toe; toes united by a membrane, hallux articulated high on the tarsus, nails narrow, slightly bent and sharp; wings shorter than the tail, which consists of sixteen wide, rounded feathers.

Somateria spectabilis. King Eider. Pl. 72, f. 29. Bill inflected, and elevated at the base, extending high up the forehead, forked or divided by an acute angle of feathers, before the nostrils strait, semi-cylindrical, terminated by a strong vaulted nail, hooked and rounded at the extremity, both mandibles with lamelliform, strong, widely set tooth-like plaits; nostrils in the centre of the bill, small, and oval; legs short, toes webbed, exterior nearly as long as the middle one; hallux with a long, lobated membrane; wings medium length, acute, first quill longest; tail of fourteen feathers.

Oidemia perspicellata. Surf Duck. Pl. 72, f. 21. Bill inflected, or tuberculated at the base, large, elevated, and strong; point much depressed, terminated by a large flat nail, with its extremity rounded, and slightly reflected; mandibles laminated, plates strong, broad, and widely set; nostrils lateral, elevated, oval, situate near the centre of the bill; legs placed far behind the centre of gravity; tarsus short; feet large, webbed, exterior toe as long as the middle one, longer than the tarsus; hallux with a large lobate marginal membrane; wings of medium length, concave, acute; tail short, graduated, acute.

Fuligula marila. Scaup Duck. Pl. 72, f. 13. Bill as long as the head; slightly elevated at the base, broad, depressed towards the point, which is round, and armed with a small deflected nail; mandibles laminated, plates broad, concealed by the deflected margins of the bill; nostrils nearly basal, lateral, oblong, small; tarsus much shorter than the middle toe; feet large, webbed, exterior and middle toes of equal length; hallux with a large, lobate membrane; wings concave, acute, first and second quills nearly equal; tail short, rounded, of fourteen or sixteen feathers.

Clangula albeola. Buffle-headed Garrot. Pl. 71, f. 29; and *C. Vulgaris*, Golden-eye Garrot. Pl. 71, f. 34. Bill shorter than the head, elevated at the base, tapering towards the point; nail of medium length, scarcely projecting beyond the edge of the mandible; mandibles with lamelliform teeth, widely set, concealed by the projecting margins of the bill; nostrils lateral, oval, in the anterior and lower part of the membrane; head large and high; legs short, toes long, webbed, middle and exterior ones of nearly equal length; hallux lobated.

Harelda glacialis. Long-tailed Hareld. Pl. 72, f. 35. Bill much shorter than the head, high at the base, narrow, abruptly contracted towards the point; nail arcuated; mandibles with laminated, wide set, tooth-like processes; nostrils nearly basal, lateral, linear, oblong, legs short; toes webbed; exterior toe nearly as long as the middle one; hallux with a large lobated membrane; wings of medium length, first and second quills equal; tail cuneiform, feathers acuminate, two central feathers elongated in the male.

Mergus serrator. Red-breasted Merganser. Pl. 71, f. 30. Bill medium-sized, or long, slender, in the form of an elongated cone, nearly cylindrical; base broad; point of upper mandible greatly hooked, and furnished with a strong nail; edges of mandibles serrated, the teeth recurved; nostrils lateral, situate towards the middle of the bill; legs short, placed backwards on the abdomen; toes completely webbed, hallux articulated on the tarsus.

Anser Canadensis. Canada Goose. Pl. 71, f. 26. Bill as long, or shorter than the head, deeper than broad at the base, and narrowed towards its extremity; entirely covered with a cere, or naked skin, with the exception of the nails of the mandibles, which are distinct and horny; laminæ of the upper mandible exposed; nostrils large, elliptical, longitudinal, placed near the middle of the bill; neck longer than in the genus *Anas*, and shorter than in *Cygnus*; legs longer than the former, and placed farther backwards; wings long, ample, tuberculated; toes palmated; hallux free, and articulated upon the tarsus, scarcely touching the ground with its tip; middle toe longest; nails falcate, dilated at the edges.

Cygnus Bewickii. Bewick's Swan. Pl. 71, f. 25. Bill equally wide throughout its length, much higher than broad at the base, where it is inflected and tuberculated, depressed towards the point; nail of upper mandible deflected, and covering that of the lower, which is flat; both mandibles with lamellated teeth placed transversely, and nearly concealed when the bill is closed; nostrils in the middle of the bill, oblong, lateral; legs short, placed behind the equilibrium of the body; toes entirely webbed; hallux small and free; wings long and ample.

Pelecanus ornocrotalus. White Pelican. Pl. 71, f. 36. Bill long, straight, broad, greatly depressed; upper mandible flattened, with a very strong hooked nail at its point, the lower formed by two bony branches, which are depressed, flexible, and united at the tip; from these branches are suspended a naked skin, in the form of a pouch, capable of great expansion; face and throat naked; nostrils basal, in the form of a narrow longitudinal slit; legs short and strong; all the four toes connected in a web.

Carbo graculus. Shag. Pl. 72, f. 25. Bill medium-sized or long, straight, compressed; upper mandible greatly bent at the point, and furrowed from the base to the tip; the lower one compressed; a membrane investing the base of the bill, extending to the throat, which, with the face, is naked; nostrils basal, linear, concealed; legs short, strong, placed far behind; the four toes included in a web, middle claw serrated; wings of medium length, first quill shorter than the second, which is the longest; tail rounded, of medium length, stiff and elastic.

Tachypetes aquila. Frigate Bird. Pl. 72, f. 26. Bill long, strong, edged, depressed at the base, and compressed at the sides, with a suture above; tips of both mandibles strongly curved, the upper one terminated by a pointed hook; nostrils more or less concealed, and linear; legs placed far back, very short; tarsus shorter than the toes, and half feathered; toes long, and half webbed; hallux articulated on a line with the toes, and semi-webbed; wings very long, straight; tail greatly furcated.

Sula fusca. Brown Gannet. Pl. 71, f. 42. Bill long, strong, in the form of an elongated cone, being thick at the base, compressed near the point, which is obliquely curved; edges of mandibles serrated; mouth very wide, cleft beyond the eyes; face and throat naked; nostrils basal, linear, concealed; legs short, strong, placed far behind, all the toes connected by a web; claw of middle toe serrated; wings long; tail conical, consisting of twelve feathers.

Plotus anhinga. White-bellied Darter. Pl. 71, f. 31. Bill long, quite straight, slender, fusiform, acuminate; edges of upper mandible dilated at the base, but otherwise compressed and inflected; both mandibles finely serrated; nostrils linear, concealed in a shallow groove; legs short, thick, strong, tarsus considerably shorter than the middle and outer toe, all the toes connected by a web; wings long, tail very long.

Phæton phœnicurus. Common Tropic Bird. Pl. 72, f. 27. Bill length of the head, thick, strong, sharp at the edges, greatly compressed, slightly sloping from the base, acuminate; edges of mandibles dilated at the base, compressed and serrated the rest of their length; nostrils basal, lateral, pervious, covered above and near the base by a naked membrane; legs very short, placed far back; all the toes connected by a web; wings long; tail short, but with two very long filamentous central feathers.

Colymbus glacialis. Great Northern Diver. Pl. 71, f. 41. Bill medium-sized, straight, much acuminate, compressed; nostrils basal, lateral, concave, oblong, half closed by a membrane; legs placed far behind; tarsus compressed; toes very long, webbed; hallux short, with a loose rudimentary web· wings short; tail very short, and rounded.

Uria alle. Little Guillemot. Pl. 71, f. 23. Bill of medium size, or short, strong, straight, acuminate, compressed; upper mandible slightly bent towards the point, lower, forming an angle more or less open; nostrils basal, pervious, lateral, concave, longitudinally cleft, half closed by a broad feathered membrane; legs short, placed far behind; tarsus slender; feet with three anterior toes only, entirely webbed; wings short.

Phaleris cristalellus. Tufted Starlkl. Pl. 72, f. 31. Bill shorter than the head, depressed, sides dilated, nearly quadrangular, notched at the point, lower mandible forming a salient angle; nostrils pervious, in the middle of the bill, near the ridge, linear, half concealed; legs short, placed far behind; tarsus slender, with three anterior toes only; claws greatly bent; wings of medium size, first quill longest.

Mormon fratercula. Puffin. Pl. 72, f. 9. Bill shorter than the head, deeper than long, greatly compressed; both mandibles arcuated, transversely furrowed, and notched towards the point; ridge of the upper mandible elevated above the level of the skull; nostrils lateral, marginal, linear, nearly concealed by a large naked membrane; legs short, placed far behind, provided with three anterior webbed toes only; claws greatly hooked; wings short.

Alca impennis. Great Auk. Pl. 72, f. 32. Bill straight, broad, compressed, much bent towards the tip, both mandibles half covered with feathers, and grooved near the point, upper mandible hooked, the lower forming a salient angle; nostrils placed in the middle of the bill, lateral, marginal, linear, almost entirely closed by a membrane, and covered with feathers; legs short, placed far behind, with three palmated anterior toes only; wings short.

Spheniscus chrysocome. Crested Penguin. Pl. 72, f. 33. Bill shorter than the head, compressed, very thick, strong, straight, hooked at the tip, obliquely grooved; edges of both mandibles inflected, the under one covered with feathers at the base, with the tip truncated; nostrils situate near the centre of the bill, and cleft in the furrow; legs very short, placed far behind, with four anterior toes, of which three are connected by a deep web, the fourth being little more than a tubercle; wings incapable of flight.

Apterodytes Patachonica. Patagonian Penguin. Pl. 72, f. 34. Bill shorter than the head, slender, straight, inflected at the tip; upper mandible furrowed throughout its length, the under wider at the base, and covered with a naked and smooth skin; nostrils placed in the upper part of the bill, concealed by the feathers of the forehead; legs very short, thick, situate very far behind, with four anterior toes, three of which are webbed, and the fourth very short; wings incapable of flight.

ORDER XVI.—INERTES.

Bill variously formed; body apparently thick, covered with down and feathers, with distant webs; legs placed far behind; tarsus short; three toes before, divided to the base, hallux short, articulated exteriorly; claws thick and sharp; wings not formed for flight.

Apteryx Australis. Australian Apteryx. Pl. 72, f. 37. Bill very long, subulate, soft, furrowed its whole length, inflected and gibbous at the point; base covered by a crinated cere; nostrils placed near the point of the upper mandible, at the termination of a tubular furrow; legs short, feathered to the knees; wings rudimentary, terminated by a spur.

Diaus ineptus. Dodo. Pl. 72, f. 28. Bill long, strong, broad and compressed; upper mandible bent at the point, transversely furrowed; lower mandible straight, gibbous, bent upwards at the point; nostrils placed in the centre of the bill, lying obliquely in a furrow; tarsus short; three anterior divided toes; hallux short, claws short and bent; wings not formed for flight.

ORNITHORYNCHUS. See *Platypus*.

OROGRAPHY (from ὄρος, a mountain, and γραφω, I write); the description of mountains, their chains, branches, &c. The most ancient, and perhaps the most accurate, method of measuring the heights of mountains, is by trigonometrical survey. The great difficulty to be encountered in this method of measurement arises from the optical delusion occasioned by the different states of the density of the atmosphere, causing a proportionate change of refraction, which may, however, be corrected by hygrometric observation. In modern times, it has been usual to ascertain the heights of mountains by barometrical observation, as being much more convenient, and sufficiently correct for all practical purposes. There is a proportionate relation between the height of the mercury in the barometer, and the altitude of the point of observation, which may guide in ascertaining within certain limits the acclivities and declivities of any line of travel, so that by observing the rises and falls in the barometer, and noting the distances, an outline may be obtained of the profile of the tract. Corrections have to be made for variations of temperature, humidity, and latitude, for ascertaining which, many experiments have been made, and formulæ deduced for the guidance of the observer. For an easy rule for such observations, see our article *Barometer*, and for tables to facilitate calculation, see De la Beche's Geology.

ORONOKO. See *Orinoco*.

ORPHAN ASYLUMS; establishments in which orphans who have not relations able to support them are provided for and educated. The care which society at large is bound to take of destitute orphans is, in many countries, an important point of political economy. The question of most consequence, in relation to the public support of orphans, is, whether it is best, in a moral, physical, and economical point of view, to bring up large numbers of orphans in great establishments, where they live together, or to put them out singly in trust-worthy families, paid by the community. In Germany, this question has been long and thoroughly discussed; and it appears that the majority of persons in that country, conversant with the subject, prefer the plan of bringing them up in separate families. Both systems have their inconveniences and advantages. It would appear to be cheaper, as well as better for the morals of orphans, to educate them in separate families; and, in the way in which asylums have been generally conducted on the continent of Europe, the health of the children has appeared not to be so well taken care of as in families. Some asylums, however, form brilliant exceptions, as the great asylum at Potsdam, near Berlin. The history of the origin of orphan asylums is uncertain. What the Romans understood by *pueri* and *puellæ alimentarii*, cannot properly be compared to our publicly supported orphans. Trajan, who did much in favour of orphans, both the Antonines, and Alexander Severus, established foundations for them; but such institutions do not seem to have become frequent till the introduction of the Christian religion. In the middle ages, however, in which so many institutions beneficial to mankind originated within the walls of thriving and opulent cities, orphan asylums became frequent in such places, particularly in the larger commercial towns of the Netherlands. In Germany, the first asylums are found in the free cities; yet their origin does not go beyond the sixteenth century. One of the most famous asylums in the world is that established by A. H. Franke (q. v.) at Halle, in 1698. In Britain, there are few asylums exclusively appropriated to orphans, these being generally disposed of in our poor-houses, &c.

ORPHEUS; one of the old sages and bards of the Greeks (about forty years before the Trojan war); according to common accounts, the son of the muse Calliope and the Thracian river-god Oagrus; according to others, of Apollo. He was educated by Linus, together with Thamyris and Hercules. His melodious voice, and his lyre with seven strings, as the story says, drew after him rocks and trees, tamed the wildest animals of the mountain forests, and calmed the whirlwinds and tempests. Some poets mention him as a king of Thrace; and the *Argonautica* (which goes under his name, though unquestionably a later production) calls him the sovereign of the Ciconians, rich in herds. Ovid also represents the ceremony of his marriage with Eurydice, or Agriope, as having taken place there. After the death of his beloved wife, the disconsolate poet wandered over the earth. When he returned home, the Ciconian women, who felt his grief as an insult, were so much excited, during the celebration of Bacchanalian orgies, that they seized the young man, and tore him to pieces in their madness. According to the *Argonautica*, on the contrary, Orpheus had already reached a venerable old age when he sailed for Colchis. He had previously visited several other countries, and especially Egypt. Enriched with knowledge, he returned, and instituted among the Greeks the Dionysian and other mysteries. He amended and regulated their religious doctrines, and led a life of singular purity. He was the inventor or maker of the lyre, the oldest musical instrument adapted to soften the fierceness of savage minds. The ancients frequently mention his works, yet it is certain that he never wrote any thing; but his ideas, his doctrines, and fables, thrown into a poetical form, have been handed down by tradition. At a very early period, poems ascribed to Orpheus were in circulation throughout Greece; but, even in ancient times, doubts were felt with regard to their authenticity; and it is probable that, as early as the age of Aristotle, none of them were entirely authentic, but that they contained portions of the poet's doctrines. We possess, under the name of Orpheus, an *Argonautica* (edited by Schneider, Jena, 1803); some sacred hymns; a work upon the properties of minerals, probably of the fourth century after the Christian era (edited by Tyrwhitt, London, 1781), and several fragments. The best edition of these works is that of Hermann (Leipsic, 1805). The Orphic poetry embraces the whole cycle of the esoteric religious doctrines, and the doctrines of the mysteries.—See George Henry Bode's *Orpheus, Poetarum Græcorum antiquissimus*, a prize essay (Gottingen, 1824, 4to).

ORR, HUGH, was born January 13, 1717, at Lochwinnoch, in the county of Renfrew, Scotland. He was educated a gunsmith and house-lock filer; and at the age of twenty went to America. One year he resided at Easton, Massachusetts, and the next he removed to Bridgewater. There he built a shop, and set up the first tilt-hammer in that part of the country, where he was for several years the only maker of edge tools, of which he manufactured many sorts. In 1748, he made five hundred muskets for the province of Massachusetts Bay, and, during the revolutionary war, commenced anew the manufacturing of arms. In concert with a French gentleman, he set up a foundery for the casting of cannon. These were cast solid and bored: most of them were iron; a few were brass. A great quantity of cannon-shot was also cast at the same furnace, and, together with the cannon, formed a valuable acquisition to the country at that period. Besides spreading the manufacture of edge tools through various parts of Massachusetts, Rhode Island, and Connecticut, Mr Orr originated the business of exporting flax-seed from the part of the country in which he resided, and probably gave the first impulse to the manufacturing of cotton. For several years, he was elected a senator for the county of Plymouth, and enjoyed the intimacy and confidence of governor Bowdoin. He died in December, 1798, in the eighty-second year of his age. In private life, he was exemplary; and his attachment to his adopted country was pure and ardent.

ORRERY, an astronomical instrument for exhibiting the motions of the heavenly bodies, was first constructed by Graham; but its name is derived from one made by Rowley for the earl of Orrery, which was supposed by Sir R. Steele to be the first ever constructed; and he therefore gave it the above name, in honour of the earl, whose name it has ever since retained, though the error on which it was adopted has long been corrected. The principal use of the orrery, is to illustrate the theory of the earth and moon, and to render it obvious and intelligible,—to exhibit to our senses the manner in which all these changes and phenomena take place, which depend on the annual and diurnal revolution of the earth, and the monthly revolution of the moon. It is so constructed, therefore, as to represent all the variety of the seasons; the vicissitudes and lengths of days and nights, also the nature of eclipses of the sun and moon, and various other phenomena. By means of this apparatus, many individuals who have not sufficient leisure to apply themselves to the study of astronomy, may, in the course of a short time, attain to a complete knowledge of several of the most remarkable appearances of the heavenly bodies, which otherwise might remain to them mysterious and inexplicable. Various forms of this instrument have been invented; but of these, the two that have been most approved of are the whole and the half sphere planetarium. At first this machine appears to have been constructed without any sphere, and with nothing more than the sun, having the earth and moon revolving around it; but soon after it was invested with half a sphere, and then with a whole sphere, in order to exhibit a more full and correct representation of the celestial bodies and of the whole solar system.

An improved orrery was invented by Mr Huygens, and is still preserved in the university of Leyden. It represents the revolutions of the five primary planets about the sun, and that of the moon about the earth, so that the situations of the planets, with their conjunctions and oppositions, are clearly seen and discovered for any time past, present, or to come. About the middle of the last century, Ferguson, the self-taught astronomer, constructed a variety of orreries, much esteemed for their accuracy and ingenuity. In 1791, an elaborate machine of this sort was exhibited in London, representing all the most remarkable motions, revolutions, and phenomena of the universe. This piece of mechanism exhibited the whole phenomena of the solar system, with the satellites of the earth, Jupiter, and the other planets, preserved in constant motion by a chronometer, even to the very diurnal rotation of the planets, and the unequal motions in their elliptic orbits. The merit of this machine is due to the celebrated M. Hahn, of the academy of sciences at Erfurt, who left it unfinished, but it was afterwards completed by M. A. de Mylius. This orrery was purchased by the British government, and sent out with lord Macartney, among other curiosities of his embassy, as a present to the emperor of China. Within the present century, many ingenious orreries have been constructed, among which, that of Mr Fulton, a self-taught artist in Fenwick, Ayrshire, may be considered the most remarkable. His machine exhibits the annual and diurnal motions of all the planets, the motions of the satellites in their proper periodic times and due degrees of inclination. By means of an engraved plate, all the planets and satellites may be placed in their proper relative positions for any given time, and by the application of a chronometer, this orrery may be made to exhibit the real aspect of the solar system at the exact period on which it may happen to be examined. Many attempts have been made to produce what are called transparent orreries, by means of the magic lantern; but to say the least of it, these are calculated—if for any thing—more to amuse than to instruct.

The difference between an orrery and a planetarium is understood to consist in this, that a planetarium exhibits by wheel-work the periodic or tropical revolutions of the primary planets round the sun, without any reference to their rotations, whereas the orrery gives, besides the revolutions of the primary planets, the revolutions of some or all of the secondaries, and the rotation of the earth, together with the moon's anomalistic revolution, and her revolution with respect to the period of the retrograde motion of the nodes. Hence the orrery, when constructed on its most comprehensive plan, may be said to comprise within itself the planetarium, the tellarium, the lunarium, and the machine for Jupiter's satellites.

ORRERY (CHARLES BOYLE), earl of, second son of Roger earl of Orrery, was born, in 1676, at Chelsea, and, at fifteen, entered at Christ-Church, Oxford. While there, he published a new edition of the epistles of Phalaris, of which doctor Bentley questioning the authenticity, he wrote an answer entitled Doctor Bentley's Dissertation on the Epistles of Phalaris examined, which produced the controversy with doctor Bentley (q. v.), in which the wit was all on one side and the truth on the other. On the death of his brother, he succeeded to the earldom, and, in 1709, was sworn of the queen's privy council. He was also envoy-extraordinary from the queen to the states of Flanders and Brabant, at the critical period of the treaty of Utrecht, and, on his return, was raised to the dignity of a British peer, under the title of *lord Boyle*. He retired from court soon after the accession of George I., and, in 1722, was sent to the Tower on suspicion of being concerned in Layer's plot, but was discharged after six months' imprisonment. Besides the edition of Phalaris, he published a comedy, called, *As you find It*, and some verses. He died in 1731. His name has been given to a well-known astronomical instrument invented by Graham. See *Orrery*.

ORRIS ROOT; the root of a white flowering species of iris, the *I. Florentina*, a native of the south of Europe. In a dried state, it is well known, on account of its communicating a grateful odour, resembling that of violets. It was formerly much employed in medicine, but is now little valued except as a perfume. It is exported from the Mediterranean in considerable quantities, and, among other uses, is employed in the manufacture of hair-powder.

ORSINI; one of the most celebrated princely families in Italy, and which, in former times, had large possessions in Hungary. In the eleventh century, it held a brilliant rank among the Roman nobility, and, in spite of the rivalship of the powerful family of Colonna, maintained its splendour under the protection of several popes who belonged to it. The founder was John Cajetan, whose descendant Matthew Rubens had three sons, who founded three lines, of which there remains at present only one, that of Orsini-Gravina, derived from Napoleon Orsini, the youngest son of Matthew. Francis Orsini (descended from this Napoleon) was made, in 1417, count of Gravina, a city in the Neapolitan district of Bari. His son James obtained the title of *duke*. The eleventh duke after him, Peter Francis, in 1667, gave up the dukedom of Gravina to his brother Dominicus, and, in 1724, was chosen pope. He ruled, under the name of *Benedict XIII.*, until 1730, when another Orsini (Clement XII.) obtained the triple crown. The latter raised the nephew of Benedict XIII., prince Beroald Orsini, to the dignity of prince of the papal see, after the emperor Charles VI. had already, in 1724, made him a prince of the German empire. The seat of the family was commonly in Naples. The family has given several distinguished men to Italy, among whom Nicholas Orsini and his cousin Lorenzo obtained some reputation in the war of Venice against the league of Cambray. The former distinguished himself by taking and violently defending Padua, in 1509, against the emperor Maximilian I.; and the latter was the first who disciplined the Italian infantry, so that they could stand the attacks of the formidable Swiss and Spanish troops.

ORT (German for *place*); appearing in geographical names, as *Fredericsort*.

ORTHITE; (ὀρθος, straight) because it always occurs in straight layers, generally in feldspar. It bears a strong resemblance to gadolinite, and consists of peroxide of cerium 19·5, protoxide of iron 12·44, protoxide of manganese 3·44, yttric 3·44, silex 32 0, alumine 14·8, lime 7·84, water 5·36. It is found in the mine of Finbo, in the vicinity of Fahlun, in Sweden.

ORTHODOXY (from the Greek ὀρθοδοξος, from ὄρθος, right, and δοξά, opinion), used only in religious matters, signifies just notions on religious subjects. Such sects, therefore, as claim to be solely in possession of religious truth can admit no others to be orthodox. In the Roman Catholic understanding of the word, he is orthodox who believes what the church believes and teaches; what is contained in the gospel, the traditions, the decrees of the councils, and the silent agreement of the church. The Greek Catholics call, in their turn, themselves *orthodox*, and the Roman Catholics *heterodox*. In Britain, the word is often used to designate Calvinists, as well by themselves as by people not belonging to their sect. See *Heretics*, *Acatholici*, and *Heterodox*.

ORTHOGRAPHIC PROJECTION OF THE SPHERE is that projection which is made upon a plane passing through the middle of the sphere, by an eye placed vertically at an infinite distance.

ORTHOGRAPHY; that part of grammar which teaches the nature and properties of letters, and the just method of spelling or writing words, making one of the four greatest divisions or branches of grammar.

ORTHOPÆDIC INSTITUTES; the name given by the Germans to establishments devoted to the cure of deformities, chiefly those of the spine, ribs, and pelvis. The word is from ὄρθος (straight) and παιδεια (the formation of a child). It is a branch of surgery much cultivated of late, and astonishing cures have been effected by perseverance and ingenuity. One of the most perfect of these institutes exists at present at Würsburg, Germany, under Mr Heine.—See his *Règlement intérieur de l'Institutorthopédique dit Carolin* (Würzburg, 1826), and *Historical Account of the Foundation of the Orthopædic Caroline-Institute*, with scientific views respecting deformities of the human body. The cases subjected to treatment in that institute are, 1. the crooked neck (*caput obstipum*); 2. curvature of the spine towards one side (*scolosis*); 3. curvature of the spine backwards (*kyphosis*); 4. curvature of the spine forwards (*lordosis*); 5. deviation of the ribs and clavicles from their proper situation and connexion; 6. deformities caused by unnatural shortness of the muscles round the hips; 7. deformity from weakness of the spine; 8. unnatural motions of the upper arm in the joints; 9. club hand, and faulty extension and flexion of the hand; 10. crookedness of the upper arm, or fore-arm; 11. contraction of the thigh towards the back; 12. contraction of one thigh towards the other; 13. faulty rotation of the thigh-bone, so that the point of the foot is turned unnaturally outwards or inwards; 14. contraction of the lower leg towards the thigh; 15. knees unnaturally bent, so as to be too far from or too near to each other; 16. club-feet bent inwards (*vari*); 17. club-feet turned outwards (*valgi*); 18. flat feet; 19. crookedness of the thigh-bone and the other bones of the leg; 20. deformities of the lower extremities from weakness; also complication of several of these deformities. There are many orthopædic institutions in Germany and France. That of doctor Leithoff, at Lubeck, is the oldest in Germany.

ORTLES-SPITZE, or ORTLER; a mountain in Tyrol, on the borders of Engadina. By some measurements its elevation is 15,430 feet, the third highest in Europe. Its summit was first reached, in 1802, by Joseph Pichler, a hunter of Passeyr.

ORTOLAN (*emberiza hortulana.*) This bird, so celebrated in the annals of gastronomy, is a native of the southern parts of Europe, though it even visits England, Sweden, &c. It appears to be identical with the *miliaria* of Varro, which was sold at such enormous prices to the epicures of ancient Rome. When killed at the proper time, these birds are very fat, but they are not so much esteemed as when they are caught alive, and artificially brought to their highest degree of perfection. This is done by confining them in a chamber from which the rays of the sun are excluded, and which is lighted by lamps kept constantly burning. There the birds are plentifully supplied with food of the most nutritive kind till they become mere lumps of fat. Their flesh is said to be extremely delicate, but so rich as soon to satiate the appetite. The ortolans are prepared for the table in various ways. Sometimes they are roasted in an eggshell—a method of cookery borrowed from the ancients. A great traffic was formerly carried on from the island of Cyprus in these birds. They are caught in vast numbers in that place, and pickled in casks, each containing from three to four hundred, prepared with spice and vinegar. In some years the number of casks exported has amounted to 400, or, upon an average, 14,000 of these highly-prized morsels. The ortolan is also reared for its vocal talents, which, however, are not of the first order. The ortolan is yellow on the throat and around the eyes; the breast and belly are red; the upper part of the body brown, varied with black.

ORTUS COSMICUS; the rising of the stars, as the expression is used by the ancient poets. As the calendar of the ancients was far from being exact, since the received length of the year differed from the actual length, they found it necessary, at a very early period, to have recourse to other signs of the lapse of time. The rising of the stars was compared with the rising and setting of the sun, and certain regulations were made accordingly. The rule, for instance, of beginning certain agricultural labours on the first day of the year was very inexact, since, for the above-mentioned reasons, that day happened in different parts of the year. On the other hand, the rule was correct to undertake them upon the day when Sirius rises at sunset, since this always happens at the same time of the year. We find, therefore, in the ancient poets and historians, especially those on agriculture, expressions which refer to this division of time. Thus the name of *ortus cosmicus* is given to the rising of a star with the sun; and *ortus acronyctos* means the rising of a star at sunset. See Lalande's *Abrégé d'Astronomie*.

ORVILLE, James Philip d'; an eminent writer on classical literature, was born at Amsterdam, of French extraction, in 1696. He studied at the university of Leyden, and, having determined to devote himself to the belles-lettres, travelled in England, Italy, France, and Germany, visiting the public libraries, and forming an acquaintance with the most celebrated classical scholars. On his return to Holland, about 1730, he obtained the chair of history, rhetoric, and Greek literature, at Amsterdam, which he occupied till 1742. He died 1751. His works are *Miscellaneæ Observationes criticæ novæ*, carried on periodically in conjunction with Burmann; an edition of the Greek romance of Chariton, with a commentary (1750, 4to); and Observations on Sicily, published after the death of the author, by Burmann, under the title of *Sicula* (1764, folio).

ORYCTOGNOSY. See *Mineralogy*.

ORYCTOLOGY; the science of the various formation of mountains; hence it is a branch of geology.

OSAGE, a river of Missouri, rises in the country west of the state, about longitude 97° west, and latitude 36° 30′ north. It flows into the state of Missouri, and joins Missouri river 133 miles above the Mississippi. It has a very winding course, is 397 yards wide at its mouth, and is navigable for boats 600 miles. Much of the land watered by it is very fertile. The two native tribes, the Great Osages and the Little Osages, live in separate settlements on this river, about 400 miles from its mouth. The Great Osages consist of about 3800; the Little Osages 1700 About 150 miles south-west of these settlements are the Osages of Arkansas, nearly 2000 in number. The united foreign missionary society have sent missionaries to the settlements in Arkansas, and in Missouri territory.

OSAGE ORANGE. See *Fustic Wood*.

OSCILLATION, in mechanics; vibration, or the reciprocal ascent and descent of a pendulum.

Axis of oscillation is a right line passing through the point of suspension parallel to the horizon.

Centre of oscillation is that point in a vibrating body in which, if all the matter of the body were collected into it, the vibrations would be performed in the same time as before.

OSIANDER, Frederic Benjamin, one of the most distinguished German professors of midwifery. was born in 1759, at Zell, in the kingdom of Würtemberg. In 1792, he was appointed professor of midwifery in the university of Gottingen, and director of the lying-in hospital, which was established in 1751, and had become the first school of midwifery in Germany. Osiander remained its director for thirty years, during which time about 3000 scholars enjoyed his instructions there. From eighty to a hundred women were received there annually, and it often happened that several years passed without the occurrence of a single death. He published the history of this interesting institution, and a description of all the remarkable cases which occurred from 1794. He died in 1822. Osiander's numerous works, on almost every branch of medicine, are enumerated in Saalfeld's History of the University of Gottingen, from 1788 (Gottingen, 1820), and in Meusel. Among these is Manual of Midwifery (in German), 1796, and Manual of Accouchment (Tubingen, 1818—1821, 2 vols., in German), with a collection of drawings; On the Diseases which took place in the Period of Development of the Female Sex (Gottingen, 1817, and continued, Tubingen, 1820 to 1822, 2 vols.)

OSIER. See *Willow*.

OSIRIS, an Egyptian god. See *Isis, Hieroglyphics*, and *Egypt*.

OSMAN. See *Caliph*, and *Ottoman Empire*.

OSMAZOME. If cold water, which has been digested for a few hours on slices of raw muscular fibre, with occasional pressure, be evaporated, filtered, and then treated with pure alcohol, a peculiar animal principle will be dissolved, to the exclusion of the salts. By dissipating the alcohol with a gentle heat, the osmazome is obtained. It has a brownish-yellow colour, and the taste and smell of soup. Its aqueous solution affords precipitates, with infusion of nut-galls, nitrate of mercury, and nitrate and acetate of lead.

OSMELITE; a mineral species found mixed with datholite, in trachytic veins, near Wolfstein, on the Rhine. Hardness between fluor and apatite; specific gravity, 2·79 to 2·83; cleavage visible in one direction only; feels rather greasy. It emits, at the ordinary temperature of a room, a distinct clayey smell, whence its name, *osmelite*, or *smelling stone*.

OSMIUM; a metal discovered by Mr Tennant among platina grains, and thus denominated by its discoverer from the pungent and peculiar smell of its oxide. Exposed to a strong heat in a cavity in a piece of charcoal, it does not melt, nor is it volatile, if oxidation be carefully prevented. With copper and with gold it forms malleable alloys, which are easily dissolved in nitro-muriatic acid, and afford by distillation the oxide of osmium. The pure metal, previously heated, did not appear to be acted upon by acids. Heated in a silver cup with caustic alkali, it combined with it, and gave a yellow solution, similar to that from which it was produced. From this solution, acids separate the oxide of osmium. Oxide of osmium becomes of a dark colour with alcohol, and after some time separates in the form of black films, leaving the alcohol without colour. The same effect is produced by ether, and with greater rapidity. It parts with its oxygen to all the metals except gold and platina. Silver, kept in a solution of it some time, acquires a black colour, but does not deprive it entirely of smell. Copper, zinc, tin, and phosphorus quickly produce a black or gray powder, and deprive the solution of smell and of the property of turning galls blue. This black powder, which consists of the metallic osmium, and the oxide of the metal employed to precipitate it, may be dissolved in nitro-muriatic acid, and then becomes blue with the infusion of galls. If the pure oxide, dissolved in water, be shaken with mercury, it soon loses its smell, and the metal forms a perfect amalgam. By squeezing the superfluous mercury through leather, and distilling off the rest, a dark-gray or blue powder is left, which is the osmium.

OSNABRUCK; a principality of the kingdom of Hanover, formerly a bishopric in the circle of Westphalia, whose bishops, after the peace of Westphalia, were alternately Catholic and Protestant. The principal rivers are the Hase and the Hunte. It has 137,000 inhabitants, with a superficial area of 9100 square miles. The principal place of the same, called also in English *Osnaburg*, lies on the Hase, and is known in history by its having been the place for the conferences of the Protestant ambassadors in concluding the peace of Westphalia (q. v.), in 1648. The population is 10,900, engaged in the manufacture of coarse woollen cloths, leather and tobacco. There are also several linen bleach-fields; and the coarse linens called *Osnaburgs* are brought in from the surrounding country to be measured and stamped. Lat. 52° 16′ N.; lon. 8° 1′ E.; 70 miles W. of Hanover. See *Hanover*.

OSPREY; the fish-hawk. See *Eagle*.

OSSIAN (*Oisian*), the most celebrated of the Celtic bards, real or fabulous, is supposed to have flourished about 300 A. D. He was the son of Fingal, a Caledonian, or, according to the Irish writers, an Irish hero. Ossian is said, like some of the celebrated poets of antiquity, to have been blind, and to have soothed his anguish for the loss of his favourite son, Oscar, by the composition of his songs. His name has derived its celebrity from the publications of Macpherson. (q. v.) In 1760, Macpherson published a volume, entitled Remains of Ancient Poetry, collected in the Highlands of Scotland, and translated from the original Gaelic or Erse Language. He was then sent to the Highlands to make further collections, and, in 1762, published the Fingal, with sixteen smaller poems, and, in 1763, Temora, with five smaller ones. The best edition of these Ossianic poems is that of Campbell, with illustrations (1822). Macpherson declared the poems to be translations from Gaelic odes of the bard Ossian, which had been preserved, partly by oral tradition, and were partly found in manuscripts. The titles are taken from the name of the hero whose deeds they celebrate, or from that of the place where the events occur. Their genuineness was called in question by the reviewers on their first appearance, by Johnson (1775), Shaw (1761), Waller, and more particularly by Laing, in his History of Scotland, and in a separate dissertation on the subject. The other side of the question was taken by Blair, Sinclair, Home, Arthur, Young, &c., who proved that originals of Macpherson's English translations were to be found in the Highlands, and were attributed to Ossian; but there was nothing to show whether it was the same Ossian who flourished in the fourth century. The principal arguments against their genuineness were derived from the state of manners described in them being inconsistent with the wild and barbarous condition of the country; the impossibility of their having been preserved for fourteen centuries by oral communication only, and of their being intelligible, if preserved, to persons acquainted only with the language of their own times. Yet it could not be denied that the poems ascribed to Ossian contained no allusions to Christianity, and described a mode of life natural to the Highlanders · that they were entirely different from the old English and Scotch ballads; and that it was difficult to suppose that Macpherson could have composed so much poetry in so short a time, and still more improbable that he could have composed it in Gaelic, a language with which he was not very familiar. (He actually published in Gaelic the seventh song of Temora.) It was also suggested that had he been the real author, he would not have been ready to transfer the honour to another, and that their long preservation might be accounted for by the attachment of the Highlanders to their heroic period, and by the existence of bardic schools among them. In 1797, the Highland society of Edinburgh appointed a committee to examine the subject, the Report of which, by Mackenzie was published in 1805. In this it appeared that traditions of the Ossianic heroes had been preserved in Ireland, and that several manuscripts existed containing ancient ballads. These traditions and ballads, which had formed the subjects of the bardic songs as late as the first part of the eighteenth century, formed, according to the Report, the groundwork of Macpherson's Ossianic poems; he had translated them freely, connected them arbitrarily, and made such changes, additions, and improvements as he had thought proper. The longer epic poems, Fingal and Temora, were by no means to be conceived to have existed in their present form; the epic dress is altogether foreign from the originals, which were short poetical descriptions. The general subject of this whole series of ballads is the deliverance of Erin from the haughty Swaran, king of Lochlin, by Fingal. Whatever was the origin of the poems, they were admired by all the nations of Europe, and translated into all the European languages. In 1807, the Highland society published the Gaelic originals of fourteen Ossianic poems, with a literal Latin translation by Macfarlane (*Dana Oisien*; new ed. Edinburgh, 1818, 3 vols). "The last incident in their story," says Mackintosh, "is perhaps the most remarkable. In an Italian version (by Cesarotti), which softened their defects, and rendered their characteristic qualities faint, they formed almost the whole poetical library of Napoleon, a man who must be owned to be, by the transcendent vigour of his powers, entitled to a place in the first class of human minds. No other imposture in literary history approaches them in the splendour of their course."—The subjects of the Ossianic poems are partly narrative and partly lyric—heroic deeds of war, vivid pictures of Highland nature, the praise of better times past, complaints of wounded feeling, &c. Their form is quite peculiar; the language concise and abrupt; in the original it is metrical. They please by their successful delineation of the passions, picturesque expressions, bold, but lovely images and comparisons, their deep pathos, their tenderness and melancholy tone. On the other hand, it has been objected to them, that they are defective in the discrimination of character, and in variety of imagery.

OSSUNNA, DON PEDRO Y TELLEZ GIRON, duke of, celebrated for his government of Naples and Sicily, was born at Valladolid, in 1579. His grandfather, viceroy of Naples, took him, when two years old, to

Italy. At the age of ten, he returned to Spain, and was educated at Salamanca. His satirical wit made him many enemies at the court of Philip II., and he was banished from the capital on account of a disrespectful answer to the king. After the death of Philip, he returned, attached himself to the duke of Lerma, the favourite minister of Philip III., and took the title of *duke of Ossunna*. The courtiers, however, again found means to procure his banishment, and he served six campaigns in Flanders. In this interval he visited England and France, and was received with many marks of favour by Henry IV. and James I., the former of whom was delighted by his wit, and the latter with his learned conversation in Latin. In 1607, the duke of Lerma procured permission for him to return, and Ossunna exercised his influence in effecting the acknowledgment of the independence of the United Netherlands by the treaty of 1609. His opposition to the expulsion of the Moors (q. v.) from Spain, exposed him to the persecutions of the inquisition, which, however, was unable to fix any charge upon him. The viceroyalty of Sicily was soon after conferred on him, and he remained there till 1615. The restoration of public security, the repression of the violences of the nobles, the encouragement of commerce and agriculture, and the deliverance of the coasts from the ravages of the Turks, prove the vigour and wisdom of his administration. In 1616, he was appointed viceroy of Naples. He resisted with success the claims of Venice to the exclusive navigation of the Adriatic. Philip, at the instigation of the papal nuncio, having formed the design of introducing the inquisition into Naples, Ossunna refused to obey his orders to this effect, and his enemies were busy in their efforts to bring him into disgrace with the court. To avoid the storm which now threatened him, he married his daughter to the son of Lerma. His opposition to the establishment of the inquisition had, however, excited the animosity of the clergy, who were very powerful in Naples; and, as he foresaw that the intrigues of the court would sooner or later strip him of his power, he formed the bold plan of raising himself to the sovereignty of the country. In prosecution of this design, he sounded the dispositions of Savoy, Venice, and France, in 1617, and formed connexions with Holland and the Porte. (See Daru's *Histoire de Venise*.) A part of his plan became known; a capuchin denounced the viceroy in Madrid, and he was recalled in 1619, but returned in a sort of triumph. On the accession of Philip IV., however, he was arrested, and proceedings were commenced against him. They continued three years, but nothing was proved against him; and he died in the castle of Almeda, in 1624, full of witty sallies to the last. See Leti's *Life of the Duke of Ossunna* (Paris, 1700).

OST, the German for *east*, appearing, of course, in a number of geographical names.

OSTADE, ADRIAN VAN, a painter of the Flemish school, was born at Lubeck, in 1610, and studied under Francis Hals. His pictures are characterized by an exact imitation of nature, and his admirable representations of subjects, which in other hands would only have been disgusting. They usually consist of the interiors of alehouses or kitchens, with Dutch peasants smoking, quarrelling, or drinking; but he throws such expression into the heads of his characters, that their vulgarity is lost in our admiration of their truth and animation. His colouring is rich and clear, his touch spirited and free, and all his works are highly finished. On the approach of the French troops, in 1662, to Haarlem, Ostade sold all his pictures and effects, in order to return to Lubeck; but at Amsterdam he was prevailed upon to remain, and he practised his profession with great reputation until his death, in 1685.

Isaac van Ostade, his brother and scholar, was born at Lubeck, about 1612. His earliest pictures, which he painted in imitation of his brother, were greatly inferior; but he afterwards adopted a style of his own, in which he was successful; and he was often solicited by contemporary landscape painters to add his figures to their pieces. He died young.

OSTEND; a fortified and well built place in the Belgic province of West Flanders, with 10,500 inhabitants, and a harbour on the North sea, into which the largest ships can enter only at flood tide; lat. 51° 13′ N.; lon. 2° 55′ E.; sixty-six miles west of Brussels. It communicates by canals with Bruges and Ghent on the east, and with Nienport on the west. Regular post-office packets convey the mail twice a week from Dover to Ostend, and from Ostend to Dover. Ostend is celebrated in history for the siege (1601—1604) which it sustained against the whole Spanish power for three years. It finally capitulated on honourable terms. See *Netherlands*, and *Belgium*.

OSTEOLITE (from the *Greek*); a petrifaction of a bone. See *Geology*, and *Organic Remains*.

OSTEOLOGY. See *Anatomy*, and *Bones*.

OSTIA; at the mouth of the Tiber, whence Rome received her supplies of all commodities by sea, celebrated in the poem of Virgil, and the traditions which represent Æneas as having landed there. Sixtus IV. and Julius II. surrounded it with fortifications. It has also a bishop's palace, with a church. During summer, on account of the *malaria*, it has but ten inhabitants, and in winter not above a hundred. The ancient Ostia, now only known by its ruins, is near the modern. Formerly, when it had 30,000 inhabitants, it formed a semicircle round the river, which makes a bend there. Ostia was never a seaport, but an unfortified anchorage ground, in which, from the time of Ancus Martius to the latest period of the republic, the Roman fleet lay moored. This made it possible for pirates to pillage the fleet in the midst of Ostia, which Cicero, in his speech for the Manilian law, so bitterly condemns. At a later period, this anchorage became so obstructed, that, even in the time of Strabo, only light vessels could go up the stream. Just before Ostia the Tiber divides into two branches; the right branch, on account of its straighter direction, appears to fill up less. Claudius and Trajan therefore built a port on the right arm of the Tiber, to supply the city more safely: this is now called *Porto*, and its prosperity caused the decline of the once important Ostia. As early as A. D. 420, Rutilius Numantianus describes Ostia as inaccessible, and Procopius (*De Bello Goth.* 1st vol., p. 26) speaks of it as in his time (the middle of the sixth century) entirely destroyed. With its decay it is probable the *malaria* increased; and the neighbouring salt-works, founded by Ancus Martius, and now scarcely discoverable, aqueducts, as also an adjoining marsh, were also pernicious. The invasion of the Saracens, who disturbed the peace of the few remaining inhabitants, caused the fortifying of the present Ostia. A celebrated picture, by Raphael, commemorates the naval battle between the Neapolitans and the Saracens.

OSTRACION is the name adopted by Linnæus for a genus of fish, which appear as if they were invested in a coat of mail; for, instead of scales, they have regular bony compartments, forming a kind of cuirass that covers the body and head, so that all the movable parts are the tail, the fins, the mouth, and a small projection at the gills. The greatest number of their vertebræ are likewise inflexible.

Their jaws are each armed with ten or a dozen conical teeth. They have but little flesh, but their liver is large, and furnishes a great quantity of oil. This genus is not well understood by naturalists, and requires close study; all the species of it are inhabitants of warm countries, and differ exceedingly in form and size. Most of them are armed with spines.

OSTRACISM; a judgment of the assembly of the people in Athens, which checked the influence of powerful citizens by an exile of ten years. If any person was regarded as obnoxious, every citizen who was of this opinion wrote the name of the person to be banished on a shell (ὀστρακον), which he deposited in the place appointed in the forum. This place was enclosed by wooden balustrades, and had ten gates, at which the ten tribes of Athens entered at the assemblies of the people. The archons counted the shells deposited by the citizens, and if at least 6000 were in favour of the banishment of the accused, the banishment took effect; otherwise, he was acquitted. Persons were exiled by the ostracism for ten years, and, after the expiration of this period, the exiled citizen was at liberty to return to his country, and take possession of his wealth, and all his civil privileges. To this sentence no disgrace was attached; for it was never inflicted upon criminals, but only upon those who had excited the jealousy or suspicion of their fellow-citizens, by the influence which they had gained by peculiar merit, wealth, or other causes. Aristotle and Plutarch called the ostracism the *medicine of the state*. Still it was often used by bad and envious men to accomplish their unlawful designs, and to destroy the influence of patriotic citizens.

OSTRICH (*struthio*). No bird is, perhaps, more celebrated than the ostrich, not only from the beauty and value of its plumage, but also from its great size and peculiar habits. It is generically distinguished by its straight and depressed bill, and the shortness of its wings, which are unfitted for flight. The African or true ostrich (*S. camelus*) is from seven to nine feet high from the top of its head to the ground; most of this, however, is made up by the great length of its neck. Its head is small, and both it and the neck are destitute of feathers, having only a few scattered hairs. The feathers on the body are blackish; those of the wings and tail are white, sometimes marked with black. The wings are furnished with spurs. The thighs are naked, and the legs hard and scaly. The ostrich inhabits the burning and sandy deserts of Africa in large flocks. This bird appears to have been known from the earliest ages: it is constantly alluded to in the Old Testament, and was one of the forbidden articles of food to the Jews. Fashion has set too high a value on the feathers of the ostrich to admit of his remaining undisturbed, even in the desolate regions which he inhabits. Anciently, also, it appears that this bird was sought for to grace the table of the epicure; thus that prince of gourmands, Heliogabalus, caused the brains of 600 of them to be served up at one meal. The hunting of the ostrich is exceedingly laborious, as he is far swifter than the fleetest horse. The mode adopted by the Arabians and Moors is to pursue the bird as long as possible, when the chase is taken up by another on a fresh horse, till the bird is worn down. This is the more readily done, as the ostrich, instead of pursuing a straight course, runs in a circuitous direction. It is also said that they are taken by a hunter covering himself with one of their skins, and then approaching them sufficiently near to surprise them. They are tamed, and are bred in some parts of Africa. The female lays from ten to twelve eggs in a hole in the sand; and, although she does not incubate them continually, no bird has a stronger affection for its offspring, or watches its nest with more assiduity. Contrary to the general opinion, she always broods over her eggs at night, only leaving them during the hottest part of the day. If the eggs be touched by any one during the absence of the birds, they immediately discover it, on their return, by the smell, and not only desist from laying any more in that place, but likewise destroy all that may have been deposited. Barrow states that in the interior of the eggs there are frequently found small, oval-shaped pebbles, of a pale yellow colour, and exceedingly hard. The eggs are said to be a great delicacy, and prepared for the table in various ways. The ostrich, in a tame state, swallows, with the greatest voracity, rags, leather, iron, or stone. Doctor Shaw says, "I saw one at Oran that swallowed, without any seeming uneasiness or inconvenience, several leaden bullets, as they were thrown upon the floor, scorching hot from the mould."

The American ostrich (*S. rhea*) is very closely allied to the preceding, and may be considered its representative in the western continent. This bird inhabits various parts of South America to the southward of the equator, but is principally found on the great plains in Buenos Ayres and the adjoining states. It is not as large as the African ostrich, and is of a uniform gray colour, except on the back, which has a brown tint. The back and rump are furnished with long feathers, which are not as rich and full as those of the true ostrich, and are but little esteemed as articles of dress or ornament, being principally used for brushes for driving away flies, or cleaning articles from dust. This bird possesses the same remarkable speed as the former species, and its running is accompanied with a singular motion of its wings. It raises one, which it holds for some time stretched out, then depresses it, and erects the other. It is taken by chasing it on horseback, and catching it with the lasso, or by means of balls connected by a strip of hide, and thrown in such a way as to entangle its legs. It discovers the same indiscriminate voracity as the ostrich, and the size of the articles it can swallow is astonishing: one that was in Philadelphia a few years ago could swallow a whole onion, the diameter of which was apparently larger than that of its own neck. The distension produced by this root, as it descended to the stomach, could be readily traced. The natural food of this bird is fruit, grain, and, in fact, most vegetable substances. The individual just alluded to fed eagerly on grass or clover.

OSTROG; an affix of several Russian geographical names, signifying *strong*.

OSTROGOTHS. See *Goths*.

OSTROLENKA; a village in Poland, thirty-one leagues north-east from Plock, with 1850 inhabitants. This place is celebrated for a battle between the French and the Russians, February 25, 1806, and a battle between the Poles, under general Skrzynecki and the Russians, under marshal Diebitsch, May 26, 1831. This engagement was very sanguinary, and the Poles were at length obliged to retreat.

OSTROV (*Russian*) signifies *island;* for instance, *Lissie-Ostrova* (Fox Islands).

OSTRYA. See *Iron-Wood.*

OSWEGATCHIE; a township of St Lawrence county, New York, on the St Lawrence river. The principal village is the post-borough Ogdensburgh, which stands on the St Lawrence, directly north of the mouth of Oswegatchie river. It is the capital of the county, and contains the county buildings. It is also a port of entry and delivery, and has a custom-house. Ogdensburgh has considerable commerce and manufactures. Its distance from Albany is 209 miles; and it stands opposite Prescot and Fort Wellington, in Canada. Population of Oswegatchie, 3934.

OSYMANDYAS; one of the Pharaohs of ancient Egypt, who flourished about 1500 years B. C. He erected the gigantic works of Thebes, built the Memnonium in the city of the hundred gates, and, according to Diodorus, inscribed on his colossus, "I am Osymandyas, king of kings: if any man will know my greatness and my resting-place, let him destroy one of my works." Heeren (*Historical Works*, xiv. 241 seq., and 317 seq.) conjectures that Osymandyas was a name of the great Rameses, or Sesostris, as all the works of art in the Memnonium relate to traditions of the exploits of this great sovereign. (See *Memnon.*) According to some writers, Osymandyas belonged to the fifteenth dynasty, and lived about 2300 years B. C. According to the explanation by the Cav. St Quentin, member of the Turin academy, of the hieroglyphics on the pedestal of a colossus made of hard red sand-stone, which is in the museum of Egyptian antiquities at Turin (taken by Drovetti, in 1818, from the ruins of the ancient temple of Carnac), that statue, the largest, and perhaps, also, one of the most beautiful which have been brought uninjured from the banks of the Nile to the continent of Europe, is the statue of king Osymandyas.

OTAHEITE. See *Society Islands.*

OTFRID, OR OTFRIED; the author of one of the earliest specimens of composition in the German language. He was a native of Suabia, and lived in the middle of the ninth century. After having become a monk of the abbey of Weissenburg, in Alsace, he studied under Rabanus Maurus, abbot of Fulda. He then returned to his monastery, where he opened a school of literature, and wrote a variety of works in prose and verse. The most important of these is a rhymed version, or paraphrase, of the gospels, in old High German, still extant, in which there are some passages of lyrical poetry. Scherz published it, with a Latin translation, in his edition of Schilter's *Thesaurus Antiquitatum Teutonicarum.*

OTHMAN. See *Caliph.*

OTHO, MARCUS SALVIUS, successor of the emperor Galba, was descended from a consular family, and passed his youth in luxury and debauch, being the confidant of Nero. This emperor appointed him proconsul in Lusitania, that he might remove an obstacle to the gratification of his passion for Poppæa Sabina, the wife of Otho, to whose beauty her husband himself had first called his attention. Otho held his place with honour for ten years. He was the first to declare for Galba, when he rebelled against Nero, and accompanied him to Rome, where he was made consul immediately after Galba ascended the throne, A. D. 67. As Galba did not adopt him for his successor, and as he was greatly distressed, having squandered away all his fortune, he determined to effect the fall of the emperor. He succeeded, with the assistance of the pretorian bands and the other troops. Galba was murdered, and Otho proclaimed emperor. But the legions in Germany proclaimed Vitellius. In vain did Otho offer immense sums to gain them to his side. Vitellius refused the offer to reign as joint emperor, and led his army over the Alps. Otho, for whom most of the provinces had declared, sent against these veteran troops an army of newly-levied soldiers, but commanded by able generals, who defeated, in three battles, the divided army of Vitellius. Elated by his success, and becoming imprudent, Otho determined on a decisive battle against the now united troops of his adversary, and was beaten. Upon receiving information of his misfortune, he resolved, by a voluntary death, to end the civil war, and pierced himself with his dagger, after reigning three months and three days. Notwithstanding his luxurious habits, he had given proofs of a daring and resolute spirit, so as to be deemed worthy of a better fate.

OTHO I., emperor of Germany, son of Henry I., was born in 912. His haughtiness and selfish spirit excited the enmity of his brothers, and even his mother was so much disgusted at them, as to employ all her influence against him in favour of her second son, Henry. Otho's firmness, however, prevailed, and he was crowned king of Germany, at Aix-la-Chapelle, in 936. Wenceslaus, on whom he had conferred the duchy of Bohemia, having been murdered by his brother, the latter, on Otho's refusal to acknowledge his claim to the succession, determined to make Bohemia independent of Germany, and was not reduced until 950, after a fourteen years' war. Otho also brought to a successful issue the struggles with the dukes of Bavaria and Franconia, and invested his son Ludolf (949) with the duchy of Suabia, and his brother Henry with that of Bavaria. Conrad, count of Worms, married Otho's daughter, and received Lorraine. Otho likewise gained reputation in his dealings with foreign states. The Danes, who had invaded Germany, were driven back beyond the Eider, the Danish king was obliged to embrace Christianity, and acknowledge himself a vassal of the empire. Louis (Outremer) called in his aid against the great vassals under the powerful Hugh the Great. Otho reduced the rebels to terms, and confirmed the authority of the king. The Italians next required his assistance to deliver them from the oppressions of Berengarius II. Otho defeated the usurper, married the widow of the last king, and was crowned king of Lombardy, at Pavia, in 951. This marriage not only engaged him in ambitious attempts for the possession of Italy, but attracted many foreigners to his court, and involved him in family dissensions. His son Ludolf, and his son-in-law Conrad, duke of Lorraine, revolted, but were worsted, and deprived of their duchies, in 954, which were placed under Bruno, archbishop of Cologne, brother of Otho. Hardly were these transactions completed, when the Hungarians broke into Germany, but were defeated by Otho on the Lechfeld, near Augsburg (August 10, 955), with such slaughter, that they never ventured to renew their invasions. Otho next turned his arms against Berengarius, who had revolted. He was crowned king of Italy by the archbishop of Milan (961), and, soon after (962), emperor, by the pope John XII. The pope took the oath of allegiance to him, and the clergy promised that, for the future, the choice of pope should always be made in the presence of an imperial commissioner. John soon repented of having given himself a master, and flew to arms while the emperor was yet in Pavia. The latter hastened to Rome, deposed that pontiff, and placed Leo VIII. in the papal chair. No sooner was Otho returned to Germany, than the Romans restored John, and reversed the measures of the emperor, who again appeared in Rome, and punished his enemies. The Byzantine court refused to acknowledge Otho's claim to the imperial dignity; but he defeated the Greek forces in Lower Italy, and the Eastern emperor, John Zimisces, gave the Greek princess Theophania to his son in marriage. Otho died in 973, leaving the reputation of great courage and the strictest integrity. The clergy in Germany were indebted to him for their elevation, which he encouraged to counterbalance the power of the temporal vassals.

OTHO II., youngest son of Otho I. and the fair Adelaide, was born in 955. His elder brothers had all died before their father, who caused him to be crowned king of Rome—the first instance of the kind in German history. He inherited from his father a hasty and unsteady temper, which, while it led him to form great projects, also pushed him forward too impatiently to their execution. Adelaide at first held the reins of government. Otho, disgusted at his state of dependence, left the court, and a civil war broke out, at the head of which was his cousin Henry, the young duke of Bavaria. Otho completely humbled him, and granted the duchy to his nephew Otho of Suabia (978), who thus became the possessor of two great fiefs. He afterwards became involved in a war with Lothaire, king of France, for Lorraine. Lothaire attacked him in Aix-la-Chapelle, in 978, and Otho was obliged to retreat, but, having collected his forces, drove back Lothaire, laid waste Champaigne, and advanced towards Paris, the suburbs of which he burned. By the terms of the peace which was concluded in 980, Lorraine was left in its former relations to the empire. Otho next attempted to drive the Greeks from Italy; but they called in the Saracens to their aid, from Sicily (981), and Otho suffered a total defeat at Basentello, in Calabria. He himself escaped only by leaping into the sea, where he was picked up by a Greek ship that was sailing by. From this he afterwards made his escape by artifice; but he died soon after, at Rome, in 983. His son *Otho III.*, who succeeded him, was born in 980, and died in 1002. With him the male line of the imperial Saxon house became extinct.

OTIS, James, a distinguished American patriot, was born February 5, 1724—5, at Great Marshes, in what is now called West Barnstable (Mass.) His family was one of the most respectable in the colony, and of English origin. In June, 1739, he entered Cambridge college. The first two years of his collegiate course are said to have been given more to amusement than to study, his natural disposition being vivacious and ardent; but subsequently he was distinguished for his application and proficiency. After finishing his course at the university, he devoted eighteen months to the pursuit of various branches of literature, and then entered upon the study of the law, in 1745, in the office of Mr Gridley, Under that eminent lawyer he employed his legal novitiate, and then went to Plymouth, where he was first admitted to the bar. The two years, however, of his residence in that town, were more occupied in study than in practice, so that, when he removed to Boston, in 1750, he was well qualified to assume a high rank in his profession. This he quickly did: his practice became very extensive. On one occasion, he went, in the middle of winter, to Halifax, in consequence of urgent solicitation, to defend three men accused of piracy, and procured their acquittal. Although his professional engagements were so numerous, he cultivated his taste for literature, and, in 1760, published a treatise, entitled the Rudiments of Latin Prosody, with a Dissertation on Letters and the Principles of Harmony, in poetic and prosaic composition, collected from the best Writers. He also composed a similar work on Greek prosody, which remained in manuscript, and perished with all his papers. It was never printed, as he said, because "there were no Greek types in the country, or if there were, no printer knew how to set them." In 1755, he married Miss Ruth Cunningham, the daughter of a respectable merchant, who brought him a dowry at that time considered very large. Amid all the embarrassments which his affairs subsequently experienced, in consequence of his entire devotion to the concerns of the public, he sacredly preserved the fortune which he received with his wife, to whom it returned after his death. The public career of Mr Otis dates from the period when he made his famous speech against the "writs of assistance," for which an application had been made, by the officers of the customs, to the superior court of Massachusetts, in pursuance of an order in council, sent from England, to enable them to carry into effect the acts of parliament regulating the trade of the colonies. When that order arrived, Otis was advocate-general, and was, consequently, requested to lend his professional assistance in the matter; but, deeming the writs to be illegal and tyrannical, he refused, and resigned his station. He was then applied to, to argue against the writs, which he immediately undertook to do, in conjunction with Mr Thacher, and in opposition to his former preceptor, Mr Gridley, the attorney-general. Of the discourse which he pronounced, president Adams the elder says, "Otis was a flame of fire: with a promptitude of classical allusions, a depth of research, a rapid summary of historical events and dates, a profusion of legal authorities, a prophetic glance of his eyes into futurity, and a rapid torrent of impetuous eloquence, he hurried away all before him. American independence was then and there born. Every man, of an immense crowded audience, appeared to me to go away as I did, ready to take arms against writs of assistance." The court adjourned for consideration, and, at the close of the term, the chief-justice, Hutchinson, delivered the opinion; "The court has considered the subject of writs of assistance, and can see no foundation for such a writ; but, as the practice in England is not known, it has been thought best to continue the question to the next term, that, in the mean time, opportunity may be given to know the result." When the next term came, however, nothing was said about the writs; and though it was generally understood that they were clandestinely granted by the court, and that the custom-house officers had them in their pockets, yet it is said that they were never produced or executed. Otis had now fully committed himself against the designs of the British ministry, and thenceforward bent all his energies to maintain the freedom of his country. At the next election of members of the legislature, in May, 1761, he was chosen, almost unanimously, a representative from Boston, and soon became the leader, in the house, of the popular party. For the detail of his course, during the period in which he was a representative, we must refer our readers to the biography of him by Mr Tudor. In 1765, Mr Otis was chosen, by the Massachusetts legislature, one of the members of a committee appointed to meet the committees of the legislatures of other colonies at New York, in consequence of the passing of the stamp-act by parliament. They met in convention October 19, in the same year, and named three committees to prepare addresses to the king, lords, and commons. On the last Mr Otis was placed. In this convention, Mr Otis made the acquaintance of many distinguished men, from different colonies, and subsequently maintained, with several of them, a friendship and correspondence. In May, 1767, after the repeal of the stamp-act, Mr Otis was elected speaker of the house of representatives; but he was negatived by the governor, who entertained a peculiar animosity towards him, from his indefatigable endeavours to defeat every plan of encroachment. In the summer of 1769, the vehement temper of Mr Otis was so much wrought upon by the calumnies which he discovered that the commissioners of the customs in Boston had transmitted to England concerning him, by which, indeed, they sought to have him tried for treason, that he inserted an advertisement in the Boston Gazette, denouncing them in severe terms. The next evening he happened to go to the British coffee-house, where one of the commissioners, a Mr Robinson, was sitting with a number of officers of the army, navy, and revenue. As soon as he entered, an altercation arose, which was quickly terminated by a blow from Robinson's cane. Otis immediately returned it with a weapon of the same kind, when the lights were extinguished, and he was obliged to defend himself, single-handed, against numbers. After some time, the combatants were separated. Robinson retreated by a back passage, and Otis was led home, wounded and bleeding. He received a deep cut on his head; and to this has been partly attributed the derangement under which he afterwards laboured. Soon after this transaction, he instituted an action against Robinson, and obtained an award of £2000 sterling damages, which, however, he gave up on receiving a written apology, in which the defendant acknowledged his fault, and begged his pardon. In 1770, he retired into the country on account of his health. At the election in 1771, he was again chosen a representative; but this was the last year that he took a part in public concerns, except occasionally to appear at a town-meeting. He withdrew also, almost entirely, from the practice of his profession. His mind became seriously affected, and continued so, with some lucid intervals, until his death. Sometimes he was in a frenzied state; at others, he exhibited rather the eccentricity of a humourist than absolute derangement. The two last years of his life were passed at Andover. After he had been there for some time, he was supposed to be completely restored, and returned to Boston. He resumed his professional engagements, and pleaded a cause in the court of common pleas, in which he displayed considerable power, but less than was his wont. The interval of reason was not, however, of long duration, and he was induced to go back to Andover. Six weeks after his return, he was killed by a stroke of lightning, in the sixtieth year of his age, May 23, 1783.

OTTAR OF ROSES; an aromatic oil, obtained from the flowers of the rose, but in such small quantities that half an ounce can hardly be procured from a hundred pounds of the petals. This oil is solid and white at the common temperature of the atmosphere, but, on the application of heat, becomes fluid, and assumes a yellow colour. It is brought in considerable quantities from Turkey, and is sold at the extravagant price of from three to five pounds an ounce. That from the East Indies, where it is said to be chiefly manufactured, when genuine, has been sold at a much more exorbitant price. It is frequently adulterated with oil of sandal wood; but the fraud is easily detected by those who are accustomed to its scent, and also by the fluidity. The true ottar of roses is, undoubtedly, the most elegant perfume known.

OTTER (*lutra*, Storr). This animal somewhat resembles the weasels, with which it was classed by Linnæus, but differs from them by living almost constantly in the water, on which it almost solely depends for subsistence. It is distinguished by having eighteen teeth in each jaw, of which twelve are false molars. The feet are palmated, and the tail flattened horizontally. They are excellent swimmers, and feed almost entirely on fish. The common otter (*L. communis*) inhabits all parts of Europe, dwelling on the banks of rivers, in burrows, forming the entrance of its hole under water, and working upwards, making a small orifice for the admission of air in the midst of some thick bush. It is about two feet in length to the insertion of the tail, which is sixteen inches long. It is brown above and whitish around the lips, on the cheeks, and beneath. The otter can be domesticated, though, from its ferocious disposition, this is a task of much difficulty. When properly trained, they become very useful, one of these animals being able to supply a large family with fish. When the otter, in its wild state, has taken a fish, it carries it on shore, and devours the head and upper parts, rejecting the remainder. It is destructive, killing more than it can eat. The female produces four or five young in the spring of the year. It fights very obstinately when hunted, often inflicting severe wounds on the dogs. Its flesh is so fishy that the Romish church permitted the use of it on *maigre* days.

American otter (*L. Brasiliensis*). This species inhabits the whole American continent, but is rare in the Atlantic coast of the United States; in Canada, however, they are very numerous, 17,300 skins having been sent to England in one year, by the Hudson's bay company. Its habits are the same as that of the European species; both have a habit peculiar to these animals: this is sliding, or climbing to the top of a ridge of snow in winter, or a sloping moist bank in summer, where, lying on the belly, with the fore legs bent backwards, they give themselves an impulse with their hind legs, that enables them to glide swiftly down the eminence. This sport they continue for a long time. The American otter is about five feet in length, including the tail, which is eighteen inches. The colour of the whole body, except the chin and throat, which are a dusky white, is a glossy brown. The fur is much esteemed, and is very dense and fine. The common mode of taking them is by sinking a steel trap near the mouth of their burrow.

Sea otter (*L. lutris*). This species is much larger than the two last, being about the size of a large mastiff, and weighing from seventy to eighty pounds. Its colour, when in full season, is perfectly black; at other times of a dark brown. The fur is very fine, and sells at very high prices in China, to which the skins are usually taken. It is exclusively found between the 49th and 60th degrees north latitude, on the north-western coasts of North America, and the shores of Kamtschatka and the adjoining islands. It is always seen on the coast or in the immediate vicinity of salt water. It feeds on almost all kinds of fish and crustaceous animals. It runs very swiftly and swims with extreme celerity, either on its back, sides, or sometimes as if upright in the water. It is caught by placing a net among the sea-weed, or by chasing it in boats. The flesh of the young is said to be very tender, resembling lamb in flavour. The female brings forth but one at a birth, and is extremely careful and sedulous in her attention to her offspring, playing with it and fondling it in various ways, and never relinquishing it as long as she can defend it. The young continues with the dam till it is old enough to seek a mate, to whom it continues constant.

OTTOMAN EMPIRE, TURKISH EMPIRE, OTTOMAN OR SUBLIME PORTE. The finest countries of the old world—Thrace, Greece, Asia Minor, Colchis, Armenia, Mesopotamia, Syria, and Egypt, together with the islands of the Archipelago, and spicy Arabia, whose commerce connects Asia and Africa with Europe, and unites the East with the West—have been ruled for five hundred years by the Turks, or Ottomans, a mixed people, composed of Tartars, robbers, slaves, and kidnapped Christian children. They are the only barbarians who have reduced civilized nations to their yoke without mingling with them, without adopting their language, their religion, their sciences, their arts, and their manners. This nation, originally a horde of robbers, become powerful by conquest, have remained strangers in the midst of Europe, and for four centuries have profaned with Asiatic despotism the classic soil of Athens, Sparta, Corinth, and Thebes, upon which, 2500 years ago, was maintained the independency of Europe, where flourished civil freedom and the refinement of polished life. We can here but briefly relate how it happened that a band of robbers from the steppes of Northern Asia should have pitched their camps in the country of Homer, of Solon, and of Pericles; and how this stronghold of despotism, erected by Asia in Europe, has yet refrained from adopting European policy.

It is only since the middle of the sixth century that history mentions the name of *Turks*. This tribe of Scythian Tartars was then settled on the banks of the Irtisch, at the foot of the Altai mountains, in the steppes of Northern Asia, on the confines of China and Persia, now inhabited by the Kirghises, Bucharians, Usbecs, and Turcomans. They carried on war with the Sassanides and Byzantine emperors, sometimes in alliance with one, sometimes with the other. About the middle of the eighth century, the eastern territories of the Turks became subject to China, and the western to Persia, which the Saracens had conquered. They now embraced Mohammedanism, and the caliph of Bagdad soon formed of them his body-guard. These military slaves successively supplied to the Saracens generals, to the caliphs *emirs al Omrah* (first ministers, like the Frankish *maires du palais*), and finally sovereign rulers. Thus the Turkish families of the Tulunides and Akshidides reigned in Palestine, Syria, and Egypt, during the ninth and tenth centuries, and that of the Gasnevides in Persia and India from the end of the tenth to the end of the twelfth century. At the same time, a Turkish tribe in Turkestan—the ancient seat of the Scythian Massagetæ, now that of the Tartars, upon the Jaxartes (Sir) and Oxus (Jihon), between lake Aral and the Caspian—threw off the Chinese yoke, and, under the name of *Seljooks* (from their leader), subdued, in the eleventh century, all Western Asia, where the warlike Togrul Beg, the grandson of Seljook, Alp Arslan, and Malek Shah founded a powerful empire, with which the crusaders contended for the possession of Palestine. In 1100, this was divided into three parts—Persia, Media, Chorasan, and the country beyond the Oxus—and there arose, during the twelfth and thirteenth centuries, the Mongols, a race differing entirely from the Tartars, to whom the Turks belong, in language and in manners. In connexion with other hordes, they destroyed the power of the Seljooks in Asia Minor; and several less powerful Mongol communities arose. But the leaders (emirs) of the Seljooks and Turcomans, who had been driven from their settlements by the Mongols, soon sallied forth from the valleys of mount Taurus, and divided Asia Minor among themselves. One of these emirs was Osman (i. e. *bone-breaker*), of the race of the Oguzian Turcomans. With his horde of some hundred Tartar families from the Caucasus, he forced (1239) the passes of Olympus, where about 800 Turcoman families still remain, and pitched his camp in the plain of Bithynia, under the protection of the Seljook sultan of Iconium. Reinforced by robbers, runaway slaves, and prisoners, he plundered the surrounding country, and took several provinces of Asia Minor from the Eastern empire of the Romans. After the death of his protector, in the year 1300 (700 of the Hegira,) he proclaimed himself sultan. He died in 1326.

Thus a bold and successful captain of a band of robbers, unobstructed by the weak and divided Byzantines, founded upon the ruins of the Saracen, Seljook, and Mongol power the empire of the Osman or Ottoman Turks in Asia; and, after him, the courage, policy, and enterprise of eight great princes, whom the dignity of caliph placed in possession of the standard of the prophet, and who were animated by religious fanaticism and a passion for military glory, raised it to the rank of the first military power in Europe (1300—1566.) The first of them was Orchan, son of Osman. In the year 1328, he fixed his residence in Bursa, capital of Bithynia, which he had conquered shortly before his father's death.—Concerning this bloody cradle of the Ottoman power, and the monuments of Osman and his successors to Amurath II., which are to be found there, see Von Hammer's *Journey from Constantinople to Brussa* (Bursa), *and to the Olympus* (Pest, 1818). He organized a valiant infantry, which he kept in constant pay, formed, in part, of Christian slaves brought up in the Mohammedan faith and the practice of arms. He subdued all Asia Minor to the Hellespont, and took the name of *Padishah*. The gate of his palace, of which the proud ruins are still to be seen, was called the *Porte*. He became son-in-law to the Greek emperor Cantacuzenus. This circumstance, and an alliance with the Genoese, who, from rivalry with the commerce of the Venetians, so powerful in the Levant, alternately courted the emperors of Constantinople and the powerful sultan of the Asiatic coast, and lent their ships to the Turks for transportation, made known to Orchan and his successors the weakness of the Eastern empire and the divisions of the Western, where religious schisms and the feudal system had destroyed all civil order, and where there was no authority or policy to hold together the whole. Asia no longer feared a crusade. More wise and intelligent than the padishahs of the eighteenth and nineteenth centuries, Orchan and his successors resolved to reduce feeble and divided Europe under the law of the prophet. Split into numerous governments, it invited them, as Asia Minor had formerly done, to victory and plunder.

Orchan's son, the brave Soliman, first invaded Europe in 1355. He fortified Gallipoli and Sestos, and thereby held possession of the straits which separate the two continents. The Ottoman armies now spread at the same time over Europe and Asia. In 1360, Orchan's second son and successor, Amurath I., took Adrianople, which became the seat of the empire in Europe, and conquered Macedonia, Albania, and Servia with his janizaries, composed of the children of Christians educated in the Mohammedan faith, together with the Timariots and Zaims, who, as vassals, were obliged to perform cavalry service. While yet elated with his victory upon the field of Caschau, the Servian Milosch Kobilowitsch, who had fought in vain for the freedom of his country, and lay severely wounded upon the ground, called him towards him, and, collecting his strength, plunged his dagger into his heart (1389). After him, the ferocious Bajazet, surnamed the *Lightning*, invaded Thessaly, and advanced to Constantinople. September 28, 1396, he defeated the Western Christians under Sigismund, king of Bohemia and Hungary, at Nicopolis, in Bulgaria, and slew 10,000 Christian prisoners; built a strong castle on the Bosphorus, and imposed a tribute upon the Greek emperor; but the arms of the Mongol Timur (see *Tamerlane*) called him back to Asia; and in the battle of Ancyra, in 1402, where more than a million warriors contested the empire of the world, the proud Bajazet was conquered and taken prisoner. Timur divided the provinces between the sons of Bajazet. Finally, in 1413, the fourth son of Bajazet, the wise and just Mohammed I., seated himself upon the undivided throne of Osman. In 1415, while the fathers of the council of Constance were burning John Huss and deposing three popes, to restore peace to the church, his victorious troops reached Salzburg, and invaded Bavaria. He conquered the Venetians at Thessalonica, in 1420; and his celebrated grand-vizier Ibrahim created a Turkish navy. He was succeeded by his son, the wise and valiant Amurath II. The brave George Castriot in Epirus (Scanderbeg, i. e. prince Alexander), the heroic John Hunniades, prince of Transylvania, and the fortress of Belgrade, the bulwark of the West, alone resisted him. After the conclusion of peace in 1440, he laid down the reins of government; but, the pope having absolved Ladislaus, king of Hungary and Poland, from his oath, and the Christians having penetrated to the borders of the Black sea, Amurath again girded on the sword of Osman, called down the vengeance of Heaven upon his perjured enemies, and conquered the Christians at Varna, in 1444. Ladislaus and Julian, the legate of the pope, were among the slain. The great Amurath again abdicated the throne, and was again recalled to it by danger. He humbled the pride of the janizaries, and conquered the Christians at Caschau, in 1449.

The Byzantine empire was already cut off from the West, when Mohammed II., the son of Amurath, and his successor, at the age of twenty-six, completed the work of conquest (1451—1481). The reading of ancient historians had inspired him with the ambition of equalling Alexander. He soon attacked Constantinople, which was taken May 29, 1453; and the last Paleologus, Constantine XI., buried himself under the ruins of his throne. Since that time, Stambul has been the residence of the Sublime Porte. Mohammed now built the castle of the Dardanelles, and organized the government of the empire, taking for his model Nushirvan's organization of the Persian empire. In 1456, he subdued the Morea, and, in 1461, led the last Comnenus, emperor of Trebizond, prisoner to Constantinople. Pius II. called in vain upon the nations of Christendom to take up arms. Mohammed conquered the remainder of Bosnia in 1470, and Epirus in 1465, after the death of Scanderbeg. He took Negropont and Lemnos from the Venetians, Caffa from the Genoese, and, in 1473, obliged the khan of the Crim Tartars, of the family of Gengis-Khan, to do him homage. In 1480, he had already conquered Otranto, in the kingdom of Naples, when he died, in the midst of his great projects against Rome and Persia. His grandson Selim I., who had dethroned and murdered his father, drove back the Persian power to the Euphrates and the Tigris. He defeated the Mamelukes, and conquered, in 1517, Egypt, Syria, and Palestine. Mecca submitted to him, and Arabia trembled.

During fifty years, the arms of the Ottomans, by sea and by land, were the terror of Europe and of Asia, especially under Soliman II. the Magnificent, also called the *Lawgiver*, who reigned between 1519 and 1566. In 1522, he took Rhodes from the knights of St John, and, by the victory of Mohacz, in 1526, subdued half of Hungary. He exacted a tribute from Moldavia, and was successful against the Persians in Asia, so as to make Bagdad, Mesopotamia, and Georgia subject to him. He was already threatening to overrun Germany, and to plant the standard of Mohammed in the West, when he was checked before the walls of Vienna (1529). But since Hungary, out of hate against Austria, had placed its king John Zapolya under the powerful protection of the padishah, and the successful corsair Barbarossa was master of the Mediterranean, had conquered Northern Africa (see *Barbary*), and laid waste Minorca, Sicily, Apulia, and Corfu, the sultan Soliman might have conquered Europe, had he known how to give firmness and consistency to his plans. The projects of the conqueror were rendered abortive by the policy of Charles V. He was resisted at sea by the Venetians, and the Genoese Andrew Doria, by the grand-master Lavalette in Malta, and by Zriny, under the walls of Zigeth.

Twelve sultans, all of them brave and warlike, and most of them continually victorious, had now, during a period of two centuries and a half, raised the power of the Crescent; but the internal strength of the state was yet undeveloped. Soliman, indeed, by his laws, completed the organization begun by Mohammed II., and, in 1538, united the priestly dignity of the caliphate to the Ottoman Porte; but he could not incorporate into a whole the conquered nations. He also imprisoned his successor in the seraglio—an education as little adapted to produce heroes as statesmen. From this time, the race of Osman degenerated, and the power of the Porte declined. From Soliman's death, in 1566, to our time, eighteen sultans have reigned, and among them all, there have not been two brave warriors, nor a single victorious prince. These sovereigns ascended the throne from a prison, and lived in the seraglio until, as not unfrequently happened, they again exchanged the throne for a prison. Several grand-viziers, such as Kiuprili, Ibrahim, and the unfortunate Mustapha Bairactar, alone upheld the falling state, while the nation continued to sink deeper into the grossest ignorance and slavery. Pachas, more rapacious and more arbitrary than the sultan and his divan, ruled in the provinces. In its foreign relations, the Porte was the sport of European politicians, and more than once was embroiled by the cabinet of Versailles in a war with Austria and Russia. While all Europe was making rapid progress in the arts of peace and of war, the Ottoman nation and government remained inactive and stationary. Blindly attached to their doctrines of absolute fate, and elated by their former military glory, the Turks looked upon foreigners with contempt, as infidels (*giaours*). Without any settled plan, but incited by a savage hatred and a thirst for conquest, they carried on the war with Persia, Venice, Hungary, and Poland. The revolts of the janizaries and of the governors became dangerous. The suspicions of the despot were quieted with the dagger and the bowstring, and the ablest men of the divan were sacrificed to the hatred of the soldiery and of the ulema. The successor to the throne commonly put to death all his brothers; and the people looked with indifference upon the murder of a hated sultan, or the deposition of a weak one.

Mustapha I. was twice dethroned (1618 and 1623); Osman II. and Ibrahim were strangled, the former in 1622, the latter in 1648. Selim II., indeed, conquered Cyprus in 1571, but, in the same year, don John of Austria defeated the Turkish fleet at Lepanto. A century after, under Mohammed IV., in 1669, Candia was taken, after a resistance of thirteen years; and the vizier Kara Mustapha gave to the Hungarians, who had been oppressed by Austria, their general, count Tekeli, for a king, in 1682; but, the very next year, he was driven back from Vienna, which he had besieged, and, after the defeat at Mohacz, in 1687, the Ottomans lost most of the strong places in Hungary. The exasperated people threw their sultan into prison. In a short time, the grand-vizier, Kiuprili Mustapha, restored order and courage and recalled victory to the Turkish banners; but he was slain in the battle against the Germans near Salankemen in 1691. At last, the sultan Mustapha, II. himself took the field; but he was opposed by the hero Eugene, the conqueror at Zentha in 1697, and, on the Don, Peter the Great conquered Azoph. He was obliged, therefore, by the treaty of Carlowitz, in 1699, to renounce his claims upon Transylvania and the country between the Danube and the Theis, to give up the Morea to the Venetians, to restore Podolia and the Ukraine to Poland, and to leave Azoph to the Russians. Thus began the fall of the Ottoman power. A revolt of the janizaries, who, abandoning their ancient rigid discipline, wished to carry on commerce, and live in houses, obliged the sultan to abdicate. His successor, the imbecile and voluptuous Achmet III., saw with indifference the troubles in Hungary, the war of the Spanish succession, and the great Northern war. Charles XII., whom he protected after his defeat at Pultawa, finally succeeded in involving him in a war with Peter; but the czar, although surrounded with his whole army, easily obtained the peace of the Pruth, by the surrender of Azoph in 1711. In 1715, the grand-vizier attacked Venice, and took the Morea; but Austria assisted the republic, and Eugene's victories at Peterwardein and Belgrade (1717) obliged the Porte to give up, by the treaty of Passarowitz, in 1718, Temeswar, Belgrade, with a part of Servia and Walachia: it still retained the Morea. Equally unsuccessful were Achmet's arms in Persia: in consequence of which an insurrection broke out, and he was thrown into prison in 1730. In 1736, the Russian general Munich humbled the pride of the Ottomans; but Austria, the ally of Russia, was not successful, and the French ambassador in Constantinople effected the treaty of Belgrade (in 1739), by which the Porte regained Belgrade, with Servia and Walachia.

After a peace of thirty years, Mustapha III. became conscious of the rising greatness of Russia, and required Catharine II. to withdraw her troops from Poland; but the victories of Romanzoff, in the war between 1768 and 1774, determined the political superiority of Russia. At the same time, a Russian fleet was victorious on the Grecian seas, and Alexis Orloff called the Greeks to freedom—an unsuccessful attempt, indeed; yet Abdul-Hamid, at the peace of Kutschuk-Kainargi, in 1774, was obliged to renounce his sovereignty over the Crimea, to yield to Russia the country between the Bog and the Dnieper, with Kinburn and Azoph, and to open his seas to the Russian merchant ships. But the pride of the humbled Porte was aroused by the rapacious spirit of Russia, and the divan, in 1787, declared war against Catharine II. The war, however, was carried on during the reign of Selim III. with so little success, that Russia, by the peace of Jassy (1792) retained Taurida and the country between the Bog and the Dniester, together with Otchakoff, and gained some accessions on the Caucasus. Austria, also, to which the Porte, in 1777, had ceded the Bukowina, a part of Moldavia, had declared war in favour of Russia, but was induced by the threats of Prussia, to restore Belgrade at the peace of Sistora in 1791.

At this time, the internal confusions of the Turkish empire were continually increasing. Selim III. was not deficient in understanding or in knowledge, but he had not energy to effect a thorough reform. How could he, with his divan, change the anti-European spirit of the Turks, restrain the pretorian pride of the janizaries, change the form of government, and the system of laws consecrated by the Islam, and protected by the ulema, reform the Oriental manners of the court and the whole constitution of the state? There was no other connexion between his wide extended realms than faith in the caliphate of the padishah, and fear of the power of the grand seignior. The former was shaken by the sect of the Wahabees (Wechabites—not reduced till 1818), and the latter thrown off by several bold governors of the provinces. Among these petty sultans were Passwan Oglou in Widdin (Viddin), Jussuff (until 1810) in Bagdad, several pachas in Anatolia, &c., Ali, pacha of Janina, and Ali Bey, in Egypt. (See *Mohammed Ali.*) The Servians wished for a native hospodar; thence arose continual insurrections, and continual acts of tyranny. The people continued plunged in ignorance, and sometimes committed acts of Asiatic barbarity. On the other hand, a spirit of freedom manifested itself in Greece, by impotent efforts, but in Servia by a vigorous resistance between 1801 and 1814. Finally, in March, 1821, the Greek nation arose to shake off the Turkish yoke.

Turkey was equally perplexed in her foreign relations. She had been mistrustful of France ever since the alliance of that country with Maria Theresa in 1756. She remained a quiet spectator of the outbreak of the revolution, and the grand-vizier had hoped that the republic would not unite with Austria. The divan, however, observed conscientiously the existing treaties, and neither in Asia nor in Europe took advantage of the favourable opportunities for restoring the ancient power of the Ottomans by a war against Persia or against Austria. At the same time, Russia stood ready upon the heights of Caucasus and at the mouths of the Danube. Bonaparte's campaign in Egypt finally raised the indignation of the Porte, which, September 1, 1798, declared war for the first time against France. By its alliance with Russia, in December, 1798, and with England and Naples, in January, 1799, it now fell under the direction of the cabinets of Petersburg and St James. A Russian fleet sailed through the Dardanelles, and a Turkish squadron, in co-operation with it, conquered the Ionian islands. Paul I. and Selim III., by a treaty at Constantinople (March, 21, 1800), formed the republic of the Seven Islands, which as well as Ragusa, was to be under the protection of the Porte. In the following year, England restored Egypt to the Porte; but the Mameluke beys and the Arnaouts filled the land with tumult and bloodshed, until, on the 1st of March, 1811, the new governor, Mehemed Ali Pacha, entirely exterminated the Mamelukes by treachery. Since then, he has ruled Egypt almost independently. The union with the European powers had, however, made Selim and some of the chiefs of the empire sensible that, if the Porte would maintain its power, it must introduce into its armies the modern tactics, and give to the divan a form more suited to the times. The Nizan Dshedid laboured, therefore, to form a Turkish army on the European model, which should supersede the janizaries. But, after the peace with France, in 1801, there were in the divan two parties, a Russian and British, and a French. The superiority of Russia pressed upon the Porte in the Ionian islands and in Servia; it was therefore inclined to favour France. When, therefore, Russia, in 1806, occupied Moldavia and Walachia, the old hostility broke out anew, and, December 30, 1806, the Porte, at the instigation of France, declared war against Russia, which was already engaged with Persia and France. The weakness of the Ottoman empire was now evident. A British fleet forced the passage of the Dardanelles, and February 20 1807, appeared before Constantinople; but the French general Sebastiani directed, with success, the resistance of the divan and of the enraged people. On the other hand, the Russians made rapid advances. The people murmured. Selim III., May 29, 1807, was deposed by the mufti, and Mustapha IV. was obliged to put a stop to the hated innovations. But, after the Turkish fleet had been entirely beaten by the Russians at Lemnos, July 1, 1807, Selim's friend, Mustapha Bairaktar, the brave pacha of Ruschuk, took advantage of the terror of the capital to seize it. The unhappy Selim lost his life July 28, 1808; and Bairaktar, in the place of the deposed Mustapha IV., raised to the throne the present sultan, Mahmoud II. (born in 1785.) As grand-vizier of Mahmoud, he restored the new military system, and concluded a truce with Russia; but the fury of the janizaries again broke out, and destroyed him and his work, November 16, 1808.

Mahmoud alone now supported the throne; for he was since the death of Mustapha IV., the only prince of the family of Osman. He soon showed extraordinary courage and prudence. He concluded peace with Great Britain Jan. 5, 1809, and continued with redoubled vigour, the war against the Russians, who already threatened the passages of the Balkan. Twice (1810 and 1811) the Russians were obliged to retreat beyond the Danube; nevertheless, their policy conquered the French party in the divan. In vain had the French emperor, in his treaty with Austria, March 14, 1812, declared that he would maintain the integrity of the Turkish territory. Notwithstanding this, before the French army had passed the Niemen, the sultan bought peace with Russia, May, 28, 1812, at Bucharest, by ceding that part of Moldavia and Bessarabia, which lies beyond the Pruth, with the northern fortresses on the Dniester and at the mouths of the Danube, and the southern gates of the Caucasus on the Kur. The Servians, left to themselves, again became subjected to Turkey. They retained, however, by their treaty with the Porte in November, 1815, the administration of the government. In 1817, Mahmoud was obliged to give up the principal mouth of the Danube to Russia. But the Greek insurrection again disturbed the relations of the two powers, and has produced important changes in the situation of the Porte. (See *Greece, Revolution of,* and *Mahmoud II.*) The Porte believed that Russia secretly favoured the insurrection, and therefore seized Moldavia and Walachia, and restricted its maritime commerce. Both were open violations of the peace of Bucharest. After an interchange of notes, the Russian ambassador left Constantinople. The mediation of the British and Austrian courts, together with the emperor Alexander's desire for peace, prevented the outbreak of a war; but the divan, under various pretexts, refused all satisfaction to the Russian cabinet, until, at last, the emperor Nicholas declared the Russian *ultimatum*, upon which the Porte, May, 14, 1826, granted all the demands of the Russian court, and promised that in Moldavia and Walachia (where, in three years, it had raised 37,000,000 of piastres, which were employed in the war against the Greeks) every thing should be replaced on its former footing, and sent commissioners to Ackerman. Here a final term was again fixed for the decision of the divan, and, Oct. 6, 1826, eighty-two articles of the Russian *ultimatum* were accepted. This treaty of Ackerman carries into effect the peace of Bucharest. The Porte surrendered to Russia the fortresses in Asia which it had hitherto held back, and acknowledged the privileges granted by Russia, to Servia, Moldavia and Walachia. The treaty was executed in 1827.

In the mean while, the Porte had begun its internal reform, and it was resolved utterly to exterminate the janizaries, who had lately burnt the suburb of Galata, from the 3d to the 5th of January, 1826. An army was formed upon the European system, and in June, 1826, the body of janizaries was destroyed after a bloody struggle. The violence employed in the execution of this and other measures, caused an insurrection, in which (August 31 and October 11) 6000 houses were burnt in Constantinople. Instead of military insubordination, the most rigid military despotism began, which did not spare even the ulema. At the same time the Porte, in June, 1827, firmly refused the offered mediation of Russia, Britain, and France, in its war with the Greeks, and the grand seignior called all his subjects (Christians included) to arms, to fight, if necessary, against all Europe. After the fall of the Acropolis (June 5, 1827,) Reschid Pacha came into possession of Livadia. East and West Hellas again submitted to the Crescent. The relations of Turkey and Greece, and those arising therefrom between the former and the great powers of Europe, have been treated of in the article *Greece*. The war between Turkey and Russsia, which began in 1828, and was terminated by the peace of Adrianople, Sept. 14, 1829, will be described in the article *Russia*. It remains only to mention here, that, though the sultan seemed, for a time, determined to infuse into his military and civil establishment as much as possible of western civilization, and though he seemed for a time successful—wore himself the European dress, and prohibited, throughout the empire, the calling of Christians "dogs" yet, according to the latest accounts, he has been obliged to give up all attempts of this kind; and the late desolating fires at Constantinople prove the sentiment with which the Turkish rabble regarded the improvements. For the geography of the Ottoman empire, see *Turkey;* for the janizaries, see *Janizaries.*

OTUS. See *Aloides*.

OTWAY, Thomas, an English writer of tragedy, was born in 1651, at Trotting, in Sussex, his father being the rector of Woolbeding, in that county. He was educated at Winchester, and was entered a commoner of Christ-church, Oxford, which he left without a degree, or any professional determination, went to London, and made some attempts as an actor, but with little success. In 1675, he produced his first tragedy of Alcibiades. The following year appeared his Don Carlos, which proved extremely successful. His theatrical reputation introduced him to the patronage of the earl of Plymouth, a natural son of Charles II., who procured him a cornetcy in a regiment of cavalry, destined for Flanders, in which country he served for a short time, and then returned, pursued by his habitual poverty. He continued to write for the stage, but found it a very scanty means of subsistence. He produced, in 1677, Titus and Berenice, from Racine, and the Cheats of Scapin, from Molière, which were acted together as play and farce, and succeeded. The following year he produced his Friendship in Fashion, a comedy, which was followed, in 1680, by his tragedies of Caius Marius and the Orphan; and, in 1682, by Venice Preserved, on which last two pieces his dramatic fame is chiefly founded. His comedies were coarse and licentious, even for that day. He died in 1685, in his 34th year, at a public house on Tower Hill, where he had secreted himself from his creditors, in a state of great destitution. It is a traditionary story that, being nearly famished, he begged a shilling of a gentleman, who gave him a guinea, and that he was choked by eagerly devouring a roll, which he purchased to allay his hunger. Pope was, however, informed, that he fell a sacrifice to a fever, occasioned by his anxious pursuit of a person who had shot a friend of the name of Blakeston. All accounts agree that he closed his life in great penury. The unhappy fate of Otway has excited great sympathy, associated as his memory is with some of the most tender and pathetic scenes in English tragedy; but his dissoluteness of life and manners, and shameless flattery of the great, much tended to abate this kindly feeling. As a tragic writer he stands high, and no one has touched scenes of domestic distress with more force and feeling. His language is easy and natural, and the sentiments and incidents moving. The miscellaneous poetry of Otway is indifferent. The latest edition of his works is that by Thornton, in 3 vols. 8vo. (1812.)

OUDE (*Dutch*) signifies *old*; e. g., *Oudenaerde*, Old Land.

OUDE; one of the provinces of Hindoostan, in the northern part of the country, lying between Agra and Delhi on the west, and Bahar and Nepaul on the east, with Allahabad on the south; lat. 26° 56′ to 28° 41′ N.; lon. 81° E. Its length is about 200 miles, and its breadth about 100, with a population of 3,700,000. The Ganges, the Gogra, and the Goomty water the rich plain which forms this province. The climate is mild, as the Nepaul mountains protect it from the cold winds of the north. Oude furnishes, in abundance, all the vegetable wealth of India—rice, wheat, and other grain, sugar-canes, indigo, opium—and is connected, by the Ganges, with the bay of Bengal. Oude is a British dependency; the nominal sovereign (styled vizier of the Mogul empire and nabob of Oude) resides at Lucknow. The rajepoots, or military caste, serve in the British army under the name of *seapoys* (*sipahis*).

OUDENARDE, or AUDENARDE; a town of Belgium, in East Flanders, capital of a district on the Scheldt, supposed by some to have been built by the Goths, about the year 411; twelve miles S. of Ghent; twenty-four N. E. Lille; population, 5084; houses, 950. It is unfortified, but well built, and has manufactures of woollens and linens. It has sustained several sieges, but is best known in history by the memorable victory gained over the French, on the 11th of July, 1708, by prince Eugene and the duke of Marlborough. The French loss was 15,000; that of the allies, 5000.

OUDNEY. See *Clapperton*.

OUEN, St; a small village about five miles N. of Paris, with 1550 inhabitants. It has become celebrated in history by the declaration issued here by Louis XVIII., May 2, 1814, promising to maintain constitutional principles. The manufactures of Ternaux have also given it celebrity. In 1351, when king John founded the order of the star, he assigned to it, as its place of assembly, the chateau at St Ouen, called *Noble Maison*, whence the knights were often called *chevaliers de Noble Maison*. St Ouen is adorned with numerous country seats.

OUISCONSIN, or WISCONSIN; a river of the North-West Territory (q. v.).

OUNCE. See *Jaguar*.

OURANG-OUTANG. See *Ape*.

OURCQ, Canal de l', runs from the river of the same name, and is chiefly intended to supply Paris with water, and to feed the canals of St Denis and St Martin. Its navigation is of little importance. It supplies the reservoir La Villette, to the N. E. of the city, from which the water is conducted into the city by pipes. The expense was 24,000,000 francs.

OUTFLANKING. See *Flank*.

OUTLAWRY is the putting one out of the protection of the law. Anciently, in Britain, an outlawed felon was said to have *caput lupinum* (a wolf's head), and might be knocked on the head like a wolf, by any one that should meet him; for having himself renounced or evaded the law, he was to lose its protection, and be dealt with as in a state of nature, where every one that should find him might slay him. But the inhumanity of the law, in this respect, had become softened as early as the times of Bracton; and now, no man is entitled to kill him wantonly, and in so doing he is guilty of murder. A defendant is outlawed, in Britain, upon certain proceedings being had, when he does not appear to answer to an indictment or process. In an indictment for treason or felony, an outlawry of the party indicted is equivalent to a conviction. Any one may arrest a person outlawed on such an indictment, either of his own motion, or upon a warrant, called a *capias utlagatum*, for the purpose of bringing him to execution. In other cases, the effect of outlawry is the forfeiture of the goods of the outlaw to the king, in whom they become vested for the benefit of the plaintiff, in the suit in which the outlawry is had. Another consequence of outlawry is, that the outlaw cannot bring any suit or process in his own name; he is, in this respect, deprived of the benefit of the law, and is, consequently, stripped of all his civil rights. The object of these severe penalties is, to compel persons sued in civil process, or indicted, to appear and answer, instead of absconding and leaving the kingdom. The law is careful that so heavy penalties should not be incurred without sufficient grounds, and the most exact and formal proceedings. It is, accordingly, provided by *Magna Charta*, that none shall be outlawed otherwise than according to the laws of the land. The ordinary proceeding for this purpose is, to issue three writs successively, to arrest the defendant. If he is not to be found, the coroner is ordered, by writ, to exact or demand him, in five county courts successively, and the sheriff is ordered to make proclamation three times, in the most public places in the county of his residence, calling upon him to appear and answer to the suit or indictment. If he does not thereupon appear, a judgment of outlawry is passed. If, however, there is any, the least, defect in the proceedings, this judgment may be reversed on error. No process of outlawry is known to be in use in any of the United States of America. If a criminal escapes from the country, the government authorizes its officers to make application to the authority of the country to which he flees, to surrender him, that he may be brought back and put upon his trial. When a person, answerable in a civil suit upon a contract, leaves the country, the party to whom he is answerable may, in most cases, follow him to the foreign country, to enforce the contract against him there.

OUTLINE, in drawing, is the representation of an imaginary line circumscribing the boundary of the visible superficies of objects, without indicating, by shade or light, the elevations and depressions, and without colour. Only one indication of light and shade is used in outlines—the greater lightness or darkness of the lines,—and a skilful artist can produce much effect with these scanty means. The study of contour, or outline, is of the greatest importance to the painter; it is to him what the fundamental bass is to the musician. In recent times, great attention has been paid to outline, and many engravings have been published, representing only the outlines of celebrated works of art, or original compositions, in outlines, by celebrated artists, such as Cornelius. In painting, the outlines may be sharp, as in the ancient German school, or more soft and less defined, as in the Italian school.

OUT OF TRIM; the state of a ship when she is not properly balanced for the purposes of navigation, which may be occasioned by a defect in the rigging, or in the stowage of the hold.

OUTRIGGER; a strong beam of timber, of which there are several, fixed on the side of a ship, and projecting from it, in order to secure the masts in the act of careening, by counteracting the strain they suffer from the effort of the careening tackles, which, being applied to the mast-head, draw it downwards, so as to act upon the vessel with the power of a lever, whose fulcrum is in her centre of gravity.

Outrigger is also a small boom, occasionally used in the tops, to give additional security to the topmast.

OUTWORKS are all works of a fortress which are situated without the principal wall, within or beyond the principal ditch. They are designed to obstruct the attack upon the principal wall, to inter cept the shot against the same, and to afford a lateral defence. All outworks must, therefore, be so constructed, 1. that the enemy must attack them before he can reach the principal wall; 2. that they give lateral defence to the principal wall; 3. that they completely cover all parts of the principal wall from the enemy's batteries erected beyond the glacis; 4. that they shall be conspicuous from the principal wall. For the most part, though not always, they are some feet lower than the principal wall. The most common outworks are, 1. the *tenaille*, which lies in the ditch, between two bastions, before the curtain, and has usually the form of a re-entering angle; 2. the *ravelin;* by it are sometimes placed, 3. *lunettes;* 4. *counterguards* (*couvrefaces*) serve as a protection to the faces of the bastion, sometimes in the form of a saliant angle before the bastion. Beyond the principal ditch, yet united with it by their ditches, are situated (to strengthen important points), 5. *horn-works*, which consist of two demi-bastions joined with a curtain, and these, again, are attached to the fortress by two wings, i. e. walls with moats; 6. *crown-works*, where a whole and two demi-bastions are employed, instead of two half bastions only; 7. *tenailles*, consisting of a re-entering angle, which is appended to the fortress by wings. If there are two neighbouring re-entering angles, then the work is called, 8. a *double-tenaille;* if the two wings are not parallel, but converging or diverging, then they are called, 9. *swallow's tails*, and, 10. *bonnet-à-prêtre*, &c. In the places of arms, of the covered way, as in almost all other out-works, there are frequently constructed works of various forms, which are called, 11. *redoubts*. On the glacis, or near its foot, frequently stand, 12. *flèches*, or, 13. *lunettes*, which have a shape resembling the bastion, and are not to be confounded with No. 3; 14. *detached works;* they become, 15. *forts*, or *detached forts*, when they are distant 500 paces, and more, from the glacis, are larger and more substantial, and, for the most part, fortified also behind.

OVARY (diminutive of *ovum*, an egg). The ovaria are two flat oval bodies, about one inch in length, and rather more than half in breadth and thickness, suspended in the broad ligaments, about the distance of one inch from the uterus behind, and a little below the Fallopian tubes. They include a number of vesicles or ova, to the amount of twelve to twenty, of different sizes, joined to the internal surface of the ovaria by cellular threads or pedicles, and contain a fluid which has the appearance of thin lymph. The ovaria prepare whatever the female supplies towards the formation of the fœtus: this is proved by the operation of spaying, which consists in the extirpation of the ovaria, after which the animal not only loses the power of conceiving, but desire is for ever extinguished. These vesicles have been generally regarded as little eggs, which detach themselves from the ovary after fecundation, and are carried into the cavity of the womb by the Fallopian tubes.

OVATION. See *Triumph*.

OVERBURY, Sir Thomas, principally known by the tragic circumstances of his death, was descended from an ancient family in Gloucestershire. He was born in 1581, in Warwickshire, and, in 1595, was entered a fellow-commoner of Queen's college, Oxford. After taking a degree, he removed to the Middle Temple, for the study of the law; but his inclination being more turned to polite literature, he preferred the chance of pushing his fortune at court. In 1604, he contracted an acquaintance with Robert Car, the worthless favourite of James I. The ignorance and mean qualifications of this minion rendered the services of a man of parts and education, like Overbury, exceedingly welcome, and he repaid his services by procuring for him, in 1608, the honour of knighthood, and the place of a Welsh judge for his father. The intimacy continued to be mutually advantageous, until the favourite engaged in his amour with the countess of Essex. Sir Thomas countenanced this gallantry in the first instance; but when that infamous woman had, by a series of disgraceful proceedings (but too much countenanced by the king himself), procured a divorce from her husband, he opposed the projected marriage between her and her gallant, by the strongest remonstrances. This counsel Car (then become viscount Rochester) communicated to the lady, who immediately exercised her influence for the removal of her adversary. An attempt was made to place him at a distance, by appointing him to a foreign mission; but, relying upon his ascendency with the favourite, which he exercised with considerable arrogance, he refused to accept it. On the ground of disobedience in declining the king's service, he was immediately arrested, and committed a close prisoner to the Tower, in April, 1613, and all access of his friends was debarred. At length, fear of his resentment and disclosures, if released, induced Car and the countess (now become his wife) to cause infected viands to be administered, at various times, to the unhappy prisoner, who finally fell a sacrifice to a poisoned clyster, September 15, 1613. All these facts afterwards appeared in evidence, when the accomplices in the murder were tried, and Sir Gervase Elways, the lieutenant of the Tower, a creature of Car's, with several others, were condemned and executed. Car and his lady (then become earl and countess of Somerset) were also convicted and condemned, but, to the disgrace of James, pardoned for no assignable cause that will not add to the ignominy of the proceeding. Sir Thomas Overbury wrote both in verse and in prose, and his poem, entitled the Wife, has been much admired.

OVERT; the same with *open*. Thus an *overt act* signifies an act which, in law, must be clearly proved, and such as is to be alleged in every indictment for high treason.

OVERTURE, in music; an introductory symphony, chiefly used to precede great musical compositions, as oratorios and operas, and intended to prepare the hearer for the following composition. But the Germans have even composed overtures for poetical works, as Beethoven's overture to Goethe's Egmont. Overtures are often played independently of the work for which they were written, as at the beginning of concerts; but their highest office is to convey to the intelligent lover of music the whole character of the following piece, or to concentrate its chief musical ideas, so as to give a sort of outline of it in instrumental music. The latter mode of composing overtures was first conceived by the French, and such is the character of the overtures of their great composers, particularly Cherubini. Carle Maria von Weber, in the overtures to the Freischutz and Oberon, has observed this rule, which did not exist when Mozart composed his admirable overtures to Figaro and Don Juan, in which the general character of the following piece is given. In the eldest overtures the fugue was the chief part, preceded by a *grave* in $\frac{4}{4}$ time, not too much prolonged, and closing in the dominante. The *grave* was often repeated after the fugue. Most of the overtures of Handel's oratorios have this form. Another form came into vogue at a later period—three musical parts, in different movements—an *allegro*, an *andante*, and again an *allegro*, or *presto*, were united. At present, the most usual form is a brilliant and passionate *allegro*, preceded by a short, solemn passage. Gluck, in his overture to *Iphigenia in Aulis*, was the first who used this form.

OVIDIUS, Publius, surnamed *Naso*, one of the most celebrated Roman poets of the Augustan age, was of an equestrian family, born at Sulmo, in the country of the Pelignians, B. C. 43. Though inferior to some of his contemporaries in purity and finish of style, he is surpassed by none of them in graceful elegance and versatility, although sometimes disfigured by prolixity, a straining after antitheses, and a forced pleasantry. But he is very happy in exhibiting the minute and peculiar traits of passion. Many of his tales are uncommonly lively and pleasing; for example, Pyramus and Thisbe, Dædalus and Icarus, Philemon and Baucis. Ovid says himself, in the tenth elegy of the fourth book, in which he describes his feelings and his life, that he was born a poet. In spite of the exhortations of his father, who wished to make him a lawyer, he had been inclined from childhood to the service of the Muses. His travels in Greece and Asia added to his accomplishments. His fondness for ease and the enjoyments of life, which his fortune placed within his power, prevented him from spending much time in perfecting his verses. His poetry has much of a sensual character, but is distinguished for the choice of the subjects, and for beauty of description. His most celebrated work, a poetic picture of mythology, is the Metamorphoses, written in hexameters—an extraordinary work, if we regard it as a whole, as it unquestionably was the design of the author that it should be. Connected by a band which we are often in danger of losing from our sight, we see a beautiful series of different tales drawn from a formless chaos. We see the world, with its harmony and order, and every thing which lives and moves in it, unfolded, through the mythological and ancient times, down to the days of Julius Cesar. Each one of these tales ends with a metamorphosis; but this frequently appears like an episode, while a long series of verses, which have not the least relation to it, contain all that is most beautiful and attractive. Similar to this is another poem of Ovid's, in distichs, in which some tale from mythology, or from the old Roman and Italian history, is given for every remarkable day and festival of the Roman calendar. It is called the *Fasti*, but embraces in six books only the first six months. We have three other poems of his on the subject of love, all written in elegiac measure; the *Amores*, or Roman love songs; the *Ars Amandi* (Art of Love); and the *Remedium Amoris*, or Remedy of Love. They contribute to give us an idea of the corrupt state of morals at that time in the Roman empire. Ovid also attempted, and not without success, a new and peculiar kind of poetry. We have twenty-one pieces called *Heroides*, some of which, however, are considered as spurious. He wrote also elegies, in the proper sense of the word, that is, songs of lamentation (he calls them *Tristia*), and letters (*Epistolæ ex Ponto*), likewise in elegiac verses, and written in a similar train of thought, during his exile. Even in these poems his tone is far from being depressed, although his heart was heavy, and the burden of years was already pressing upon him. The stream of his verses, however, in these productions, is sometimes shallow; yet here and there we find places where his feelings are expressed with truth and liveliness.

Until his fiftieth year Ovid appears to have lived almost solely for poetry and for pleasure, in an easy intimacy with his relations and friends, and was a welcome visitor at the court of Augustus. His works were well adapted to the public taste, and had obtained him much reputation; and he might have hoped to pass the remaining years of his life in peace under the shadow of his laurels. But Augustus suddenly banished him to Tomos, on the inhospitable coasts of the Black sea, the habitation of the rude Getæ. He declares, in more than one place, that an error, and not a crime, was the cause of his exile. He frequently calls his poetry the cause of all his unhappiness. His licentious verses were certainly not the cause of his punishment, but he hints that he had seen something, and thus drawn upon himself the anger of Augustus. Many think that this had reference to the shameful licentiousness of Julia, the infamous daughter of the emperor. Ovid died at Tomos, after ten years of exile, at the age of sixty, A. D. 18. Among the poems which he left, there is a piece, in elegiac verses, called the *Ibis*, full of abuse and maledictions against some unknown person. Some other smaller poems are falsely attributed to him. But many really authentic pieces have been lost; among others, his tragedy Medea. Among the best editions of the entire works of Ovid, and of some particular poems, is that of Nicholas Heinsius (Amsterdam, 1658—61, 3 vols., 12mo), improved, and accompanied with notes by Burmann (1727, Amsterdam, 4 vols., 4to). From this, with the notes of Heinsius, and an excellent verbal index, Fischer published a new edition (Leipsic, 1758 and 1773, 4 vols.) Mitscherlich published an edition of the complete works from the text of Burmann (Gottingen, 1796—98, 2 vols.) The latest is that of Baumgarten Crusius (1825.) Of the Metamorphoses Gierig has given a good edition, with an excellent Latin commentary (Leipsic, 1804—7; new edition, Leipsic, 1821—23, 2 vols.); and likewise of the *Fasti* (Leipsic, 1812—14.) Of the elegies and epistles an edition with notes has been published by Harles (Erlangen, 1772) and Oberlin (Strasburg, 1778.) De St Ange (died in 1811) made a good translation of Ovid's works into French verse (new edition, Paris, 1824, 11 vols.)

OVIPAROUS. See *Egg*.

OWEN, John, D. D., an English nonconformist divine, was born at Stadham, in Oxfordshire, in 1616, of which place his father was vicar. He studied at Oxford, and remained at college until his 21st year. On the breaking out of the civil war, he took part with the parliament, became a tutor in the family of Sir Robert Dormer, and chaplain to lord Lovelace, but subsequently repaired to London, where he wrote his Display of Arminianism, which was published in 1642. He had hitherto been a Presbyterian in matters of church government, but now adopted the Congregational or Independent mode, as more conformable to the New Testament, and published his reasons. During the siege of Colchester, he became acquainted with general Fairfax, and, having acquired great celebrity, was appointed to preach at Whitehall, the day after the execution of Charles I. He was soon after introduced to Cromwell, whom he accompanied in his expeditions both to Ireland and Scotland, and, in 1651, was made dean of Christchurch college, Oxford, and, in 1652, was nominated by Cromwell, then chancellor of the university, his vice-chancellor. On the death of the protector, he was deprived both of that and his deanery, by the influence of the Presbyterian party. At the meeting of his brethren at the Savoy in 1658, he took a great part in drawing up the confession of faith of the Congregational churches. While the bill to revise the conventicle act was pending, he drew up reasons against it, which were laid before the lords. He died in 1683, in the 63d year of his age. Doctor Owen's works, which are of a high Calvinistic character, amount to seven volumes in folio, twenty in 4to, and thirty in 8vo. In this number are an Exposition on the Epistle to the Hebrews (in 4 vols., folio); a Discourse on the Holy Spirit; a complete Collection of Sermons, and several Tracts (folio); an Inquiry into the original Nature, Institution, &c. of Evangelical Churches (4to); an Account of the Nature of the Protestant Religion, &c.

OWHYHEE. See *Sandwich Islands.*

OWL (*strix*); a nocturnal bird of prey, whose appearance and harsh voice are well known. They are distinguished by having a large head, very large eyes, directed forwards, encircled by a ring of fine feathers covering the base of the beak and the opening of the ear. Their external toe can be turned behind at pleasure. If any analogy is allowable between different tribes of animals, the owls might be said to resemble moths, and to differ from the diurnal birds of prey as these do from butterflies. They are wholly nocturnal (except a few species,) seeking for their prey during the evening or night; and, from the enormous size of the pupils of their eyes, they are enabled to see well in the dark; while, in the day, their sense of sight is imperfect; hence, during this time, they keep concealed in some secure retreat. Their hearing is very acute, and their plumage soft and loose, enabling them to fly without noise, and thus to come on their prey in an unexpected manner. They feed on small birds, mice, bats, and moths, swallowing them entire, and casting up the indigestible parts in the form of small balls. They breed in fissures of rocks, or in holes of trees, the female laying from two to six eggs. They are found in every part of the globe. The genus *strix* of Linnæus has been variously subdivided by modern naturalists. Cuvier admits the following sub-genera: *otus, ulula, strix syrnium, bubo surnia, nyctea, nudipes, scops.*

In North America there are ten or twelve species of these birds, some peculiar to the country, and others common to the two continents. These have been arranged by Bonaparte (see *Annals Lyceum Nat. Hist.*) in the following manner: sub-genus *surnia; S. funerea*, or hawk-owl (*nyctea, scops syrnium, bubo*, Cuv.); blackish-brown, thickly spotted with white, beneath varied with white and brown; tail with narrow white bands, and reaching three inches beyond the wings; feet densely covered with long feathers; bill yellow. This species is very rare: it inhabits the north of both continents. *S. nyctea* (snow-owl); white, more or less spotted, and barred with dusky; tail rounded, reaching but little beyond the wings; feet densely covered with long feathers; bill black; inhabits the north of both continents; not very uncommon. *S. cunicularia* (burrowing owl); cinnamon gray, spotted with whitish; beneath white, spotted with cinnamon brown; tail even, reaching but little beyond the wings; feet covered with short, scattered bristles. This is peculiar to America, is found near the Rocky mountains, and as far south as Paraguay. *S. asio* (mottled or red owl); dark brown; young tawny red, mottled with black, pale brown, and ash-colour; wings spotted with white; beneath white, mottled with black and brown; tail even, reaching to the tip of the wings; feet densely covered with short feathers; inhabits America; common. Sub-genus *ulula* (*otus, ulula, bubo, syrnium*, Cuv.) *S. otus* (long-eared owl); mottled, primaries banded with ferruginous; tufts long; wings reaching beyond the tail; found in both continents; common. *S. brachyotos* (short-eared owl); whitish ferruginous, spotted with dark-brown; tufts short; wings reaching to the tip of the tail; found in both continents; common. *S. nebulosa* (barred owl); pale brown, with transverse, whitish spots; beneath whitish; neck and breast with transverse bars; belly and vent with longitudinal streaks of brown; tail reaching beyond the wings; bill yellow; found in both continents; common. *S. acadica* (little owl); dark-brown, spotted with white; beneath whitish, spotted with reddish-brown; tail short, reaching about to the tip of the wings; very small; inhabits both continents; more common in America. Sub-genus *bubo, S. Virginiana* (great horned owl); mottled; primaries and tail-feathers banded with black and dusky; auricular conch restricted; wings not reaching to the tip of the tail; very large; found in most parts of America. *S. cinerea* (cinereous owl); dark-brown, mottled with whitish; face white, with black, concentric circles; tail reaching beyond the wings; both fasciated; the bands mottled; bill yellowish white; iris yellow; inhabits arctic America, the largest species in that country. Sub-genus *strix. S. flammea* (barn owl); yellowish tawny, with small spots of white; beneath whitish, with blackish points; wings reaching two inches beyond the tail; bill whitish; found in both continents. There are several other species said to exist in America; thus Mr Say indicates *S. bubo* and *phalænoides*, &c.

The *barn owl*, also called *common screech* or *white owl*, is a bird of elegant plumage, in length between thirteen and fourteen inches; stretch of wing three feet. It is very common in Europe, North and South America, in the deserts of Tartary, in Persia, Hindoostan, and even in Australasia, and is met with at the cape of Good Hope. In Europe, it chiefly frequents inhabited districts, and deposits from two to six eggs in a hole of a wall, under the eaves of buildings, in decayed trees, &c., without any formal nest. It usually haunts churches, towers, barns, maltings, farm-houses, &c. In a state of nature, it generally leaves its haunts about twilight, skimming along the ground, exploring the neighbouring woods for prey, and returning before sunrise, making a sort of blowing noise, like the snoring of a man with his mouth open. When it flies or alights, it doles out certain lugubrious notes, which, added to the solemnity of the scene, especially when near churchyards, often inspire awe and apprehension in the minds of the ignorant.

OWLENSPIEGEL. See *Eulenspiegel.*

OX; the general designation for the different species and varieties of the genus *bos*. This is distinguished by having smooth horns, directed sideways, and then curving upwards or forwards in a semi-lunar form. The common ox (*B. taurus*) has a flat forehead, which is longer than it is broad, and round horns placed at the two extremities of a projecting line which separates the front from the occiput: the horns, however, differ so much in their form and direction in the numerous varieties which domestication has produced in this species, that no specific character can be based upon them. The colours of these animals are extremely variable, being reddish, white, gray, brown, black, &c. As with most of the other animals which have been in a state of domestication from the earliest ages, it is difficult to determine from what species they were originally derived: it has been generally supposed that it was the *bos urus*, but Cuvier has shown that this idea is erroneous. To few animals is man more indebted for important services than to the common ox, and none afford him so many articles of food. Throughout a great part of the world, its flesh is the principal article of animal food, while from the milk of the female, of itself an almost indispensable part of our diet, are manufactured cheese, butter, cream, &c. The skins furnish the greatest part of the leather used in the arts. In fact, there is scarcely any part of this valuable animal that is not useful to mankind. The horns are converted into combs, knife-handles, &c.; glue is made from the refuse of the skin, hoofs, &c.; the bones form a cheap substitute for ivory; the blood is employed in the manufacture of prussian blue; the hair is used by plasterers, and the fat in the formation of candles and soap.

The period of gestation of the cow is the same as that of the human species, and she most generally has but one at a birth. The young, like that of the horse, is very perfect and vigorous soon after birth, though it needs the care of the mother for a considerable time. It attains its full vigour at about three years, and the natural term of its life is about fourteen years. The domesticated ox is liable to many diseases, one of which arises from its swallowing the hairs that it licks from its own body. These hairs, being indigestible, remain in the stomach, and at last become united into large solid balls. The varieties produced by domestication and climate are innumerable, and impossible to designate.

B. urus (wild bull; bison of the ancients). This species is distinguished by an arched forehead, wider than it is long; horns attached below the occipital ridge; by the length of its legs; by an additional pair of ribs; by a woolly hair which covers the neck and head of the male, forming a beard under the chin. This animal appears to have formerly been a native of all parts of Europe, but is now only found in the forests of Lithuania, &c. It is exceedingly ferocious and untractable.

One of the most extraordinary species is the *B. grunniens* (grunting ox, horse-tailed ox, or yack). This is a small animal, with a tail resembling that of a horse, and also with a mane on the neck and back. It has a short head, broad nose, and large ears; the horns are short, slender, round, upright, sharp-pointed, and bent inwards. The whole body is covered with long hair, and is entirely black, except the front, ridge of the back, and tail, which are white. There is much dispute about the size, some travellers describing it as smaller than the domestic cow, while others state that it is far larger. From the accounts of Russian naturalists, it appears probable that there are two varieties, differing materially in size. The voice of these animals is very peculiar: instead of lowing, like the other species of this genus, they utter a sound resembling the grunting of a hog. They are susceptible of domestication, but always retain some of their natural ferocity. The wild breed are very dangerous, fighting desperately when attacked. The most valuable part of these animals is their tail. They form the standards designating the rank of superior officers in the Turkish army, and are extensively used in India as brushes to drive away insects: they are also employed by the Chinese to adorn their caps. See *Bison, Buffalo, Musk Ox.*

OXAHEVRITE; a mineral from the hot spring of Oxhaver, in Iceland. It occurs in thin veins and crystals, which are acute octahedrons, with a square base. It appears to be a variety of apophyllite.

OXALIC ACID. This acid may be obtained from sugar, as follows:—To six ounces of nitric acid, in a stoppered retort, add by degrees one ounce of loaf-sugar in small lumps. A gentle heat may be applied during the solution, and nitric oxide will be evolved in abundance. When the whole of the sugar is dissolved, distil off a part of the acid, till what remains in the retort has a sirupy consistence; and this will, on cooling, form regular crystals, amounting to fifty-eight parts from 100 of sugar. These crystals must be dissolved in water, recrystallized, and dried on blotting paper. Numerous other substances, when treated by distillation with nitric acid, afford the oxalic acid; such as honey, gum Arabic, alcohol, the sweet matter contained in fat of oils, the acid of cherries, the acid of tartar, beech wood, the acids of currants, citrons, raspberries, silk, hair, tendons, wool, also other animal substances, as the coagulum of blood, and whites of eggs. M. Berthollet mentions a difference between animal and vegetable substances thus treated with nitric acid, viz. that the former yielded, besides ammonia, a large quantity of an oil which the nitric acid could not decompose; whereas the oily parts of vegetables were totally destroyed by the action of this acid. He further remarks, that the quantity of oxalic acid, furnished by vegetable matters, thus treated, is proportionable to their nutritive quality, and particularly that from cotton he could not obtain any sensible quantity. Oxalic acid is found in the state of oxalate of lime in the roots and leaves of a great number of plants. It particularly abounds in the leaves of the *oxalis acetosella*, and of the *O. corniculata.* The crustaceous lichens contain nearly one half their weight of oxalate of lime—a substance which is to these plants what carbonate of lime is to corallines, and phosphate of lime to animal bones. Oxalic acid crystallizes in four-sided prisms, the sides of which are alternately broad and narrow, and the summits dihedral. They are efflorescent in dry air, but attract a little humidity if it be damp. They are soluble in one part of hot and two of cold water, and are decomposable by a red heat, leaving a small quantity of a coaly residuum; their acidity is so great, that, when dissolved in 3600 times their weight of water, the solution reddens litmus paper, and is perceptibly acid to the taste. The oxalic acid is a good test for detecting lime, which it separates from all the other acids, unless they are present in excess. It has likewise a greater affinity for lime than for any other of the bases, and forms with it a pulverulent, insoluble salt. With barytes, it forms an insoluble salt, but capable of dissolving in water acidulated with oxalic acid. Oxalate of magnesia, too, is insoluble unless the acid is in excess. The oxalate of potash exists in two states, that of a neutral salt, and that of an acidule. The latter is generally obtained from the juice of the leaves of the sorrel, ten parts of which yield five of juice, which give a little more than one two hundredths of the salt, which requires to be repeatedly crystallized in order to obtain it pure. It unites with barytes, magnesia, soda, and ammonia, and most of the metallic oxides, into triple salts. This salt, besides its use in taking out ink-spots, and as a test of lime, forms, with sugar and water, a pleasant, cooling beverage, and possesses considerable powers as an antiseptic. Oxalic acid acts as a violent poison when swallowed in the quantity of two or three drachms; and several fatal accidents have lately occurred, in consequence of its being improperly sold for Epsom salts. Its vulgar name of *salts*, under which the acid is bought for the purpose of whitening boot-tops, occasions these lamentable mistakes. The immediate rejection from the stomach of this acid by an emetic, aided by copious draughts of warm water containing bicarbonate of potash, or soda, chalk, or carbonate of magnesia, are the remedies.

OXENSTIERN, Axel, count of; a Swedish statesman, born at Fano, in Upland, in 1583. His own inclinations and the wishes of his family having destined him for the church, he applied himself, at Rostock, Wittenberg, and Jena, principally to theology, for the study of which he always retained a predilection. After finishing his studies, he visited most of the German courts, and in 1602, returned to Sweden. In 1606, Charles IX. sent him on a public mission to Mecklenburgh, and, in 1608, he was admitted into the senate, in which his thirteen immediate ancestors had held a seat. The infirmities of age having induced his sovereign, not long after to appoint a regency, Oxenstiern was placed at the head of it, and on the accession of Gustavus Adolphus, was made chancellor. In 1614, he accompanied the new king to Germany, and soon after had the satisfaction of seeing the hostilities between Sweden and Russia terminated by the honourable peace of Stolbova. He was subsequently appointed governor-general of all the conquests of the Swedish arms in Germany; and when Gustavus penetrated into the heart of that country, Oxenstiern was invested with full powers in all affairs, both civil and military, on the Rhine, and fixed his headquarters at Mentz, while Gustavus advanced into Bavaria and Franconia. On the fall of his master at Lutzen (1632), he exerted himself in every way to protect Sweden and her allies, and visited Dresden and Berlin, to concert measures for continuing the war. The Swedish government conferred on him full powers to adopt any measures which he considered for the public good. He therefore assembled a congress at Heilbronn, in which he was recognised as the head of the Protestant league. This league was held together and supported solely by his influence and wisdom, and, in 1636, he returned to Sweden, after an absence of ten years, laid down his extraordinary powers, and took his seat in the senate, as chancellor of the kingdom, and one of the five guardians of the queen. His great aim was to bring the German war to a successful conclusion; and with this design he sent his son John to Germany, in the capacity of Swedish plenipotentiary. In 1645, he assisted in the negotiations with Denmark at Bromsebro, and, on his return, was created count, by queen Christina, and at the same time was elected chancellor of the university of Upsal. When the queen declared her intention of naming her successor, Oxenstiern opposed that measure with all his influence, and resisted, with still stronger urgency, her determination to abdicate the crown; finding her, however, fixed in her resolution, he pretended sickness, as an excuse for staying away, and taking no part in a step which he foresaw would be the beginning of evil. From that time, he took no pleasure in public affairs, although he continued to serve his country with zeal and ability until his death, in 1654. Oxenstiern must be ranked among the greatest men who have taken a distinguished part in the affairs of the European world. Great and elevated views, a wonderful political sagacity and foresight, firmness and loftiness of purpose, wisdom in contriving and prudence and energy in executing, a strict integrity, and a constant devotion to the welfare of his country, are among the characteristics of this great statesman. The constitution, which was prepared by him, and accepted by the states of Sweden in 1634, is esteemed a political master-piece.

OX-EYE; a small cloud or meteor, seen at the cape of Good Hope, which presages a dreadful storm. It appears at first in the form or size of an ox's eye, but descends with such celerity, that it seems suddenly to overspread the whole hemisphere, and at the same time forces the air with such violence, that ships are sometimes scattered several ways, some directly contrary, and many sunk down right.

OXFORD; a city of England, capital of the county to which it gives name; 45 miles S. E. of Worcester, 58 W. by N. of London, 74 S. W. of Cambridge; lon. 1° 16′ W; lat. 51° 45′ N.; population, in 1831, 20,649. It is an episcopal see, and seat of a university. It is delightfully situated on a gentle eminence, in a valley at the confluence of the Isis and Cherwell, and near the Thames. Along these rivers, and between them and the city, lies a tract of beautiful and luxuriant meadows. For the beauty and magnificence of its buildings, Oxford is equalled by few cities in the world. From the neighbouring heights it presents a grand and imposing spectacle, from the number and variety of its spires, towers, domes, and other public edifices, while these structures, by their magnitude and splendid architecture, give it, on a nearer approach, an air of the most striking magnificence. The High-street is one of the most beautiful in the world. The houses inhabited by traders are indifferent. The city contains a cathedral, thirteen elegant parish churches, houses of worship for Catholics, Quakers, Methodists, and Baptists, a town and county hall, a jail, a bridewell, an infirmary, market buildings, and charity schools. Four members are sent to parliament, two for the city, and two for the university. Markets on Wednesday and Saturday. Oxford has no staple manufacture or branch of trade, but derives its chief support from the university. It is an ancient town, was the residence of Alfred, and has often been the seat of the English kings and parliaments. The university of Oxford, from the extent and number of its buildings and institutions, and the wealth of its endowments, is by far the greatest in the world. Its origin is involved in obscurity: some suppose that it was founded, and some that it was revived, by Alfred; others fix its origin considerably later. It is, as is well known, distinguished for its attachment to tory principles, and has been the seat of classical learning in England, while in Cambridge mathematical science has been more assiduously cultivated. It consists of twenty colleges and five halls, each of which forms an establishment within itself, having its own students and teachers, revenues and regulations; yet they are all united under the government of one university. The officers by whom the university is immediately governed, are the chancellor, high steward, vice-chancellor, and two proctors. In addition to the private officers in each college and hall, who see that due order and discipline are preserved, and all the liberal sciences taught, there are twenty-three public professors of the several arts and sciences. In 1829, the members of convocation were 2365; members on the books, 5009. About one third of these are maintained by the revenues of the university; the rest live at their own expense. The students wear a peculiar dress. The buildings of the university are very magnificent, and excel those of Cambridge; yet the chapel of King's college at Cambridge is thought to surpass any single edifice at Oxford. The other edifices belonging to the university, besides the colleges and halls, are the public schools, the Bodleian library, the picture gallery, the theatre, capable of containing 4000 persons, the Clarendon printing-house, the Radcliffe library, the Ashmolean museum, the astronomical observatory, and the botanic garden. The Bodleian library is one of the largest and most valuable in Europe. (See *Libraries.*) There are four terms in the year at the two English universities. To obtain the degree of bachelor of arts, a residence of three years, or twelve terms, is necessary at Cambridge; four years, or sixteen terms, at Oxford, except in case of sons of peers, and the eldest sons of baronets and knights, who may stand candidates after three years. For the degree of master of arts, three more years are required. A person of two years' standing may be admitted a student of the civil law; after being five years a student, he may receive the degree of bachelor of civil law; and in four years more, the degree of doctor. The degree of bachelor of divinity is conferred on masters of arts of four years' standing, and the degree of doctor four years after. (See *University.*) Some of the eminent men educated at Oxford are Wickliffe, Wolsey, More, Raleigh, Chillingworth, Hampden, Harvey, Clarendon, Hale, Locke, Addison, Steele, Blackstone, Lowth, Johnson, Adam Smith, Jones, Gibbon, and Fox. The colleges and halls (see *College*), with the date of their foundation, and number of fellowships and scholarships, are exhibited in the following table:—

Colleges.	Foun.	Fell.	Schol.
1. Merton	1264	24	4
2. University	1280	12	17
3. Baliol	1281	12	14
4. Exeter	1314	25	1
5. Oriel	1326	18	13
6. Queen's	1340	24	16
7. New College.	1386	70	
8. Lincoln	1427	12	8
9. All-Souls	1437	40	
10. Magdalen	1456	40	30
11. Brazen-Nose	1509	20	32
12. Corpus-Christi	1516	20	20
13. Christ Church	1525	20	20
14. Trinity	1554	12	12
15. St John's	1557	50	3
16 Jesus	1571	19	18
17. Wadham	1613	15	15
18. Pembroke	1620	14	30
19. Worcester	1714	21	13
20. Hertford	1740	12	4

Halls.	Foun.
1. St Alban's	1200
2. St Edmund's	1317
3. St Mary's	1325
4. New Inn	1391
5. Magdalen	1480

See Wood's *Historia Univ. Oxon.*, and *Athenæ Oxonienses;* Ackerman's *History of the University of Oxford;* the articles in the first and third numbers of the *Quarterly Journal of Education*, and the *University Calendar.*

OXFORDSHIRE; an inland county of England, bounded north by Warwickshire and Northamptonshire, east by Buckinghamshire, south by Berkshire, and west by portions of several counties. It extends from north to south about forty-eight miles, and its greatest breadth is twenty-six. The outline of Oxfordshire is very irregular, consisting of two parts, the northern or larger part forming an irregular triangle, joined by a narrow neck to the smaller part. The boundary on the south and south-west is determined by the course of the Thames, which makes a considerable curve in its passage between Oxfordshire and Berkshire. The soil of this county, taken generally, is extremely fertile, furnishing abundant crops of grain and grass. The land is dry, being exempt from bogs, fens, and standing pools, but by no means destitute of running water, the streams which intersect the country, and the rivers which they feed, being more numerous here than in most other parts of the kingdom. In the northern part of the county the soil is chiefly strong, deep sand, and the enclosures are formed by stone walls; the central district is rich meadow land, with a subsoil of gravel, remarkable for the multitude and variety of fossil remains which are embedded in it; and in the south, the county exhibits a pleasing alternation of hill and dale. The greater portion of the county is under tillage, and the most common corn crops are wheat, barley, and oats; peas are cultivated occasionally, and on the heavier soils beans; and among the usual agricultural products are also turnips, both common and Swedish, tares, clover, trefoil, and santfoin. The grass-land, which is chiefly on the banks of the rivers, or near the centre of the county, affords pasturage for milch cattle, and considerable quantities of butter are made here, and calves are fattened for the London market. A great many sheep are kept, and also swine, which furnish the materials for making brawn and sausages. The mineral products of this county include limestone, freestone, slate for the roofs of buildings, pipe-clay, fuller's earth, and ochre, which is found of a peculiarly fine quality near Shotover. The principal manufactures are those of blankets, for which Witney has long been noted; a kind of coarse velvet called *shag*, made at Banbury; and gloves and various articles of polished steel, made at Woodstock; besides lace-making, chiefly practised in the southern part of the county. Oxfordshire possesses one city, Oxford, which is also the county town; two boroughs, Woodstock and Banbury; and the market towns are, Bicester, Burford, Chipping-Norton, Deddington, Henley-upon-Thames, Thame, Watlington, and Witney, besides Bampton, Charlbury, and Dorchester, of which the markets are discontinued. Population of the county in 1831, 151,726.

OXFORD CHRONICLE. See *Arundelian Marbles.*

OXFORD, LORD. See *Harley.*

OXIDES. See *Oxygen.*

OXUS. See *Gihon.*

OXYGEN GAS was discovered by doctor Priestley in 1774, and by Scheele in 1775, without previous knowledge of Priestley's discovery. It received the names of *free air*, *dephlogisticated air*, *pure air*, and *vital air*, from its property of supporting combustion and animal life—terms changed, by the inventors of the new nomenclature, to *oxygen gas*, from its property of giving acidity to compounds in which it predominates (ὀξυς, acid, and γενεσθαι, to produce). *Oxygen* denotes its gravitating matter, or substance, when not in the gaseous state; *oxygen gas* is the name given to it in its elastic form. Oxygen is the most extensively diffused of material substances. In the state of gas, it forms one-fifth of the atmosphere; it is, also, the principal component part of water, forming eight ninths of it by weight. It consists in acids, in the alkalies, and earths, and, consequently, in their saline compounds. It is combined with metals; is found in numerous forms of combination in mineral substances, and is an abundant ingredient in all vegetable and animal matters. It is also the most energetic, in its chemical agencies, of all the elements of matter, and the history of its properties and combinations forms the most important subject in chemistry. Oxygen gas no where exists pure and uncombined; hence certain processes are required to obtain it in an insulated form. These consist, chiefly, in applying heat to some of its compounds, in which it is retained by a weak attraction. The substances commonly employed for the purpose, are, the peroxide of manganese and the chlorate of potash. It may be procured from the former in two ways; either by heating it to redness in a gun-barrel or iron retort, or by putting it into a flask, with half its weight of concentrated sulphuric acid, and heating the mixture by means of a lamp. To obtain it from the manganese, it is only necessary to heat it to a full red heat, in an iron retort. The gas obtained by the first process is the purest; that by the latter is liable to contain small quantities of carbonic acid and hydrogen, but it is sufficiently good for ordinary purposes. Oxygen gas is colourless, inodorous, and tasteless, and is rather heavier than common air, its specific gravity being 1·111. It is absorbed by water very sparingly, 100 cubic inches of water, freed from air by boiling, absorbing about 3·5 cubic inches, under a common atmospheric temperature and pressure. Its most striking property is that of exciting and supporting combustion. A candle, or wax taper, freshly extinguished, is relighted on being immersed in a bottle of this gas. A partially kindled piece of charcoal, on being introduced into it, also inflames with great rapidity and brilliancy. But the most interesting combustion, in this gas, is that of iron wire, or a watch-spring, which only require to have their temperature excited by the previous burning of a piece of sulphur-match attached to them at the extremity, in order to be kindled into the most vivid and intense combustion, burning with sparks and scintillations, until pieces many inches in length, are consumed; and this in a jar of the gas not holding above three pints or a quart. Phosphorus, on being previously lighted in a pendent spoon, and lowered into a jar of oxygen gas, burns with the evolution of a light so intense as scarcely to bear being looked upon with the naked eye. During the burning, in each of these instances, the oxygen is consumed; and the products of the combustion, except in the case of the iron, are substances possessed of acid properties. Oxygen gas is equally powerful in sustaining animal life by respiration. If an animal be confined in a given quantity of it, it will live four or five times longer than a similar animal will do in the same volume of atmospheric air. If, again, an animal be confined in a gas which cannot afford oxygen to it, it immediately dies. It is found that a quantity of oxygen gas always disappears, or is consumed during respiration, and is indispensable to the continuance of life; and atmospheric air, or any gas, sustains life only from the oxygen it contains, and is capable of affording to the blood. Pure oxygen gas, however, is not well adapted to animal existence. If an animal be confined in a given quantity of it, its respiration becomes hurried and laborious before the whole of the oxygen is consumed; and it dies even though so much oxygen is present, that another animal, of the same species, introduced into the residual air, will live. From whence it appears, that pure oxygen proves too highly stimulating for animal life. As mixed in our atmosphere, it is precisely adapted to the support of animal existence. The oxygen forms only one-fifth of its weight, and is diluted with a large volume of another gas, of an opposite or negative quality. (See *Nitrogen.*) Oxygen gas has been administered, with good effects, in diseases of the thorax, in paralysis, general debility, &c. A remarkable case was that of a large dog, that had been, for several hours, completely drowned, and yet, in consequence of an injection of this gas into his lungs, was perfectly restored to life and all his functions in a very short time. Oxygen has a very powerful attraction for most of the simple bodies, and there is not one of them with which it may not be made to combine. The act of combining with oxygen is called *oxidation*, and the bodies, after having united with it, are said to be *oxidized.* The compounds, so formed, are divided, by chemists, into acids and oxides. The first division includes those compounds which possess the general properties of acids, and the second comprehends those which not only want that character, but many of which are highly alkaline, and yield salts by uniting with acids. The phenomena of oxidation are very variable. It is sometimes produced with great rapidity, and with the evolution of heat and light, as in the case of the iron wire above alluded to; on other occasions it takes place slowly, and without any appearance of heat or light, as is exemplified by the rusting of iron when exposed to a moist atmosphere. All inflammable or combustible substances derive their power of burning in the open air from their affinity for oxygen. The changes experienced by burning bodies are no less remarkable than the alteration which appears in the oxygen in which they are burned. While the oxygen loses its power of supporting combustion, the inflammable substance lays aside its combustibility, becoming an oxidized body, and incapable of being burned again, even in pure oxygen. It has also acquired an addition to its weight. It is an error to suppose that bodies lose any thing while they burn. The materials of our fires do, indeed, disappear; but when, by means of a suitable apparatus, we detain the products of the combustion, it is found that they weigh more than the inflammable matter that has been burned; and the increase in weight is exactly equal to the quantity of oxygen which has disappeared during the process. For many years before the discovery of oxygen gas, all combustible bodies were supposed to contain a certain principle, which was called *phlogiston*, to the presence of which was ascribed their combustibility. It was supposed that when a body burns, phlogiston escapes from it; and that, when the body has lost phlogiston, it ceases to be combustible, and is then a dephlogisticated or incombustible substance. A metallic oxide was consequently regarded as a simple substance, and the metal itself as a compound of its oxide with phlogiston. The heat and light which accompany combustion were attributed to the rapidity with which phlogiston is evolved during the process. The discovery of oxygen, and the experiments of Lavoisier, overthrew this doctrine. On burning phosphorus in a jar of oxygen, he observed that a considerable quantity of the gas disappeared, that the phosphorus gained in weight, and that the increase of the latter exactly corresponded to the loss of the former. That oxygen is really present in the oxidized body, he proved by a very decisive experiment. Some liquid mercury was confined in a vessel of oxygen gas, and exposed to a temperature sufficient for causing its oxidation. The oxide of mercury, so produced, was put into a small retort, and heated to redness, when it was re-converted into oxygen gas and fluid mercury, the quantity of the oxygen being exactly equal to what had combined with mercury in the first part of the operation.

OYER AND TERMINER (*French*, to hear and determine,) in English law, is a court held by virtue of the king's commission, to hear and determine all treasons, felonies, and misdemeanors. This commission is usually directed to two of the judges of the circuit, and several gentlemen of the county; but the judges only are of the quorum, so that the rest cannot act without them. (4 *Black.* 269.) See *Assizes.*

O YES (corrupted from the French *oyez*, hear ye) is an expression used by the crier of a court, in order to enjoin silence when any proclamation is made.

OYSTER; a well known edible shell-fish, belonging to the genus *ostrea*, occurring in most parts of the world. The European oyster (*O. edulis*), which forms a considerable article of trade on the coasts of England and France, is generally taken by dredging, after which the animals are placed in pits formed for the purpose, furnished with sluices, through which, at spring tides, the water is suffered to flow. In these receptacles, they acquire the green tinge so remarkable in the European oyster, and which is considered as adding to their value. This colour, which at one time was supposed to be owing to some mineral impregnation, has recently been ascertained to arise from the *confervæ*, and other marine vegetable matter, on which the animal feeds. In many places, oysters are *planted*, as it is called; that is, large artificial beds are formed in favourable situations, where they are permitted to fatten and increase. The breeding time of oysters is in April or May, from which time to July or August, the oysters are said to be *sick*, or *in the milk.* This is known by the appearance of a milky substance in the gills. Oysters attain a size fit for the table in about a year and a half, and are in their prime at three years of age; though what the natural term of their lives may be, it is difficult, if not impossible, to determine with any degree of accuracy. Many curious discussions have arisen as to whether oysters possessed the faculty of locomotion. It is well known that, in general, they are firmly attached to stones, or to each other; and it has been stated, and generally believed, that they are not endowed with any powers of changing their position. From the observations and experiments of naturalists, however, it appears that they can move from place to place by suddenly closing their shells, and thus ejecting the water contained between them with sufficient force to throw themselves backward, or in a lateral direction. Oysters form the basis of many culinary preparations, but are much more digestible in their raw state than after any mode of cooking them, as this process, in a great measure, deprives them of the nourishing animal jelly which forms so large a portion of their substance. The shell of the oyster is composed of carbonate of lime and animal matter, and was, at one time, supposed to possess peculiar medical properties; but analysis has shown that the only advantage of these animal carbonates of lime over those from the mineral kingdom arises from their containing no admixture of any metallic substance. The lime obtained from the calcination of oyster shells, though exceedingly pure and white, is better suited for work which does not require great tenacity, as for plastering rooms, than for the common purposes of building, as it does not form as hard a compound with sand as the mineral limes.

P

P; the sixteenth letter and twelfth consonant in the English alphabet. It is one of the mutes and labials, and represents a sound produced by closely compressing the lips till the breath is collected, and then letting it issue. (For the similarity and mutual interchange of *b* and *p*, see *B*.) P also interchanges in many languages with other letters, as in *Polly*, for *Molly*. The dialects of Upper Germany in general prefer the *p*, those of Lower Germany the *b*; and Ihre declares all Swedish words beginning with a *p* to be of foreign origin. The Π of the Greeks signified 80; in low Latin, P signified, according to Ugution, 100:

> *P similem cum C numerum monstratur habere;*

according to Baronius, 7. In music, *p* signifies *piano* (softly). S. P. S. P. is an abbreviation for *St Peter* and *Saint Paul*, as on the papal seals. On medals, P stands for various names of persons, places, and qualities, as *pater*, *populus*, *pius*, *perpetuus*, *pontifex*, *proconsul*, &c.; P. P., *pater patriæ*; S. P. Q. R., *senatus populusque Romanus*; P. M., *pontifex maximus*; C. P., *Constantinople*. It is a curious circumstance, that the Romans gave to their P the same form which the Greeks had given to their Rho. pp is used in German as a sign for *&c*. The Hebrews had no *p*, and used the *ph* instead. The Arabians have no *p*. On visiting cards, *p. p. c.*, *p. f. s. a.*, or *p. d. a.*, are abbreviations for *pour prendre congè*, *pour faire ses adieus*, or *pour dire adieu*, and signify the taking of leave. See *Abbreviations*.

PACA (*cœlogenus*); a genus of animals inhabiting South America, living in the woods, in the vicinity of water, concealing themselves in superficial burrows, which have three openings to them. They are thick set. and of a clumsy form, and, when full grown, measure about two feet in length from the tip of the nose to the extremity of the body, and about one foot in height both before and behind; for, although the hinder legs are much longer than the anterior, they are so bent as to allow a much greater proportion of their length to touch the surface of the ground. Their eyes are large, prominent, and of a brownish hue, their ears nearly naked, and their whiskers long and rigid. They swim and dive remarkably well, and run with considerable swiftness. Their cry is not unlike that of a pig. Their flesh is said to be very savoury, and forms a staple article of food in many parts of South America. They seldom leave their burrows, except during the night, when they sally forth in search of their food, which consists of herbs and fruit. They are taken alive by closing two of the openings to their burrows, and digging up the third. They often make an obstinate defence, and are capable of biting very severely. They are readily tamed, and might prove a valuable addition to the stock of domestic animals, especially in the Southern States, where the winter is not sufficiently severe to injure them. They are very prolific, and, in a warm climate, would require but little attention.

PACHA, OR PASHAW; the military governor of a Turkish province. The most distinguished have three horse-tails carried before them; the inferior, two. The power of a pacha is very great. He is, however, appointed and removed at the will of the sultan, is obliged to serve when called on in the wars of his master, and to pay over a certain portion of the revenue of his province into the imperial treasury. The provincial administration is entirely in his hands.

PACIFICATOR. The attitude of a person who makes peace, or performs any other act of grace, consisted, among the ancients, in the horizontal extension of the right arm, the hand being quite open. —No title was so much coveted by Napoleon as that of *pacificateur*, at the beginning of his power; hence it appears so often on the early medals commemorating his exploits. Alexander of Russia, too, was highly desirous of the same character. Nothing flattered him more than the praise of having given peace to the world.

PACIFIC OCEAN; the great mass of waters extending from Beering's straits to the Antartic circle, a distance of 3200 leagues, and from Asia and New Holland to America. It is separated from the Atlantic and Antarctic oceans only by imaginary lines. The Andes and Rocky mountains of the western coast of America, and a series of mountainous ranges near the eastern coast of Asia and New Holland, nearly surround this vast basin. Its extreme breadth a little north of the equator is 4550 leagues; between South America and New Holland (lat. 30° S.) it is 2970 leagues. (See *Ocean*.) It contains an infinite number of isles scattered over its surface, more particularly between lat. 30° N. and 50° S., to which modern geographers have given the general appellation of *Oceanica*. (q. v.) It was at first called the *South sea*, by the European navigators, who entered it from the north. Magellan gave it the name of *Pacific*, on account of the prevalence of calms which he experienced in it; but it by no means deserves this name, as it is remarkable for the fury of its storms and the agitation of its waters. The trade-winds, which constantly blow between the tropics, render the passage from the western coast of America to Asia very short; but the return is proportionately difficult. (See *Winds*.) The Portuguese were the first Europeans who entered the Pacific, which they did from the east. Balboa, in 1513, discovered it from the summit of the mountains which traverse the isthmus of Darien. Magellan sailed across it from east to west in 1521. Drake, Tasman, Beering, Anson, Byron, Bougainville, Cook, Vancouver, Lapérouse, and others, traversed it in different directions, in the seventeenth and eighteenth centuries. D'Entrecasteaux, Krusenstern, Kotzebue, Beechey, &c., have visited it more recently.—See Burney's *Chronological History of Discoveries in the South Sea* (5 vols., 4to, 1803—1817). See, also, *North Polar Expeditions.*

PACTOLUS; a river of Lydia, celebrated for its golden sand. (See *Midas.*) After flowing by Sardis, it emptied into the Hermus.

PADANG. See *Sumatra.*

PADERBORN, formerly an imperial bishopric, in the circle of Westphalia, was attached, in 1802, to Prussia, in 1806 to the kingdom of Westphalia; on the dissolution of which, it was restored to Prussia. The capital, of the same name, with 6700 inhabitants, is situated at the sources of the Pader. The university of Paderborn was suppressed in 1819. There is still a gymnasium here, with a seminary for priests five monasteries, and a cathedral. Lat. 51° 43′ N.; lon. 8° 43′ E.

PADISHAH; a title assumed by the Turkish sultan, derived from *pad* (protector or throne), and *shah* (king, prince). The Ottoman Porte formerly applied this name only to the king of France, calling the other European sovereigns *kral;* but it has since been applied to some of the other leading princes of Europe.

PADUA (in Italian *Padova*, anciently *Patavium*); an old and strong city of the north of Italy, in a province of the same name, in the Austrian government of Venice. It is connected with the Brenta by a canal. Population, 46,600; lat. 45° 24′ N.; lon. 11° 52′ E. Among the ninety-six churches is the cathedral, which is one of the richest in Italy. The sacristy contains a portrait of Petrarch, who held a canonry in it, and bequeathed it a part of his library. The church of St Justina is esteemed one of the most beautiful in Upper Italy. In front of it is the public square *prato della valle*, anciently *campus Martius*, adorned with statues of celebrated Paduans. The Franciscan church *chiesa del santo* contains many splendid monuments and valuable curiosities. In front of it stands the equestrian statue erected by the republic of Venice to her general Gattamelata. The Episcopal seminary, restored by cardinal Barbarigo, an excellent institution for the education of 100 young clergymen, contains a celebrated printing establishment, to which belongs a collection of Latin, Greek, and Oriental manuscripts. The celebrated university was founded by the emperor Frederic II., who, in 1222, transferred the university of Bologna to Padua. The medical faculty is the most highly esteemed. The number of students was formerly several thousands, from all the countries of Europe; at present it is about 400 in all departments. The celebrity of this institution procured for the city the epithet *la dotta* (the learned) among the Italians. The principal university building, *il palazzo degli studj*, is adorned with portraits of the most eminent professors. It has twelve colleges, an observatory, a botanical garden, an anatomical theatre, &c. There is also in Padua a branch of the royal institute of science and art, a society of science and agriculture, &c. Among the buildings, the town-house (*palazzo della ragione*), containing a bust of Livy (q. v.), who was a native of Padua; the *palazzo della podestà*, with a public library; the theatre, &c., are particularly worthy of mention. The grave of the Trojan hero Antenor, who, according to Virgil, was the builder of Padua, is still shown here. After the fall of the Roman empire, Padua fell into the hands of the Lombards, from whom it was taken by Charlemagne. Under his successors, it came under the dominion of Ezzelin, afterwards received a republican government, but, in the fourteenth century, came under the dominion of the powerful family of Carrara, and was conquered by Venice in 1405. Commerce is chiefly in the hands of the Jews, who live in a separate quarter of the city. The woollen and silk manufactures are considerable. In summer the city is thronged by the rich from the neighbourhood, particularly at the time of the fair in June. The territory of Padua (*il Padovano*) is one of the most fertile and beautiful countries in Europe, and contains 300,000 inhabitants. On the abolition of the republic of Venice, the town and territory fell to Austria; were afterwards ceded to Napoleon; but, in 1814, were restored to Austria, and now form a part of the Lombardo-Venetian kingdom.

PÆAN, or PÆON (παιαν, παιων); a surname of the healing power, particularly of Apollo. The etymology and signification of this epithet are differently explained by different critics. In the hymns to Apollo, the phrase *Io Pæan* was frequently repeated, and hence they were also called *pæans.* They were sung in time of sickness, and on other occasions, when it was desirable to propitiate the favour of the god. Hymns to other deities, or songs in praise of heroes, were at a later period likewise called *pæans.* A pæan was sung, previous to battle, in honour of Mars, and after a victory, in praise of Apollo.

PÆDOBAPTISTS. See *Baptists.*

PÆONY (*pæonia*); a genus of plants belonging to the natural family *ranunculaceæ*, distinguished for the size and magnificence of the flowers. The species are herbaceous, or very rarely shrubby, having perennial, tuberous roots, and large leaves, which are more or less divided. The flowers are solitary, and of a white or purplish colour. Seventeen species are known, of which one inhabits the North-West coast of America, and the other the temperate parts of the Eastern continent. Several are cultivated in gardens, where they are very conspicuous, especially when the flowers are doubled.—The common pæony (*P. officinalis*) grows from ten to twenty inches in height. The leaves are bi or triternate, and the flowers are disposed at the extremity of the branches, are very large, and ordinarily of a fine red colour. The double variety, which is now so common every where, when introduced at Antwerp, about the end of the sixteenth century, sold for twelve crowns a root. This plant is a native of the mountains of the south of France, Spain, and Siberia. It was celebrated among the ancients, who attributed to it various marvellous properties, but has now lost all such reputation.—The tree pæony (*P. mou tan*), in our climate, is not usually more than three or four feet high, but, in China, its native country, is said to attain the elevation of ten feet, or even a much greater. It was discovered in the mountains of Honan about the year 400, but did not attract the attention of the Chinese till two or three centuries after. When once known, its culture spread with amazing rapidity, and large sums of money were sacrificed to procure fine varieties. For more than a thousand years, it has been generally cultivated by the Chinese, who plant it in the open air, but take unwearied pains during its growth, protecting it from the dust, high winds, and heavy rains, by means of tents, and dispensing the heat and light of the sun at their pleasure. They have varieties of all colours,—white, yellow, red, purple, violet, blue, and even black. The Chinese name is *mou-tan.* The most common variety with us has superb flowers, of a clear red or rose colour, and from five to seven inches in diameter, which, besides, diffuse a very agreeable odour. It is hardy enough to bear our winters, but does not flower in such perfection as when protected. A rich light soil is best adapted to it; and ripened cuttings, planted in a shady place, will take root freely.

PÆSTUM (called by the Greeks *Posidonia*); an ancient Greek city of Lucania, Lower Italy, lying in a plain at the foot of mount Alburnus, on the Sinus Pæstanus, or gulf of Salerno. It is celebrated by the Latin poets for the fragrance of its twice-blowing roses, and its mild and balmy air. Nothing now remains of it but some fragments of its walls, of two temples of Doric architecture, and of a forum. The city is thought to have been founded by a Greek colony from Sybaris (q. v.), 510 B. C. It was destroyed by the Saracens in the ninth century. The coins of Pæstum, as well as its ruins, show it to have once enjoyed great prosperity. The ruins were discovered in the middle of the last century.

PÆTUS. See *Arria*.

PAGANS; the worshippers of many gods, the heathen, who were so called by the Christians, because, when Constantine and his successors forbade the worship of the heathen deities in the cities, its adherents retired to the villages (*pagi*, hence *pagani*, countrymen), where they could practise their ceremonies in secrecy and safety. In the middle ages, this name was given to all who were not Jews or Christians, theirs being considered the only true religion and divine revelations; but, in more modern times, Mohammedans, who worship the one supreme God of the Jews and Christians, are not called *pagans*. The idea of heathenism is of early origin. Moses used every precaution to prevent an intercourse between the Hebrews and heathen nations, prescribed the renunciation of idolatry as a requisite to citizenship in the Hebrew state, and forbade any league with the Ammonites, Moabites, &c. When the kings relaxed in the observance of these regulations, the prophets raised their voice against the defection. The distinction between pagans and non-pagans, so far as claims to a revelation are concerned, is very slight, since there are many heathenish people who have traditions of revelations made to them. We also find in some religions of paganism (for example, with Zoroaster, Plato, and Socrates) pure and elevated notions, and precepts of morality, which would not disgrace even Christianity. Paganism has likewise her moral heroes, as well as Judaism and Christianity. And although St Augustine declared that the virtues of the heathens were but splendid vices, yet this assertion is by no means borne out by facts. The true point of distinction is, therefore, to be placed in the recognition or denial of one, universal, perfect Being, that is, in the reception of monotheism or polytheism. The apostle Paul speaks, (*Rom.* i. 23) of a law of God written on the hearts of the gentiles or pagans, and declares that pagans who live by this divine law in their consciences, are a law unto themselves; and that, to every man who does good, God will render "glory, honour, and peace, to the Jew first, but also to the gentile, for there is no respect of persons with God." (*Rom.* ii. 10, 15.) Clement of Alexandria, and many of the fathers, were of opinion that, as God had given prophets to the Jews, so he had raised up great men among the heathen, and thus rendered both capable of arriving at the enjoyment of divine happiness. These views, however, met with strong opposition. Augustine, although he acknowledged that the virtues of a Brutus, Decius, and Regulus, were subjects of admiration, and proper models of imitation, yet maintained the principle that all the noble and good actions of the pagans were done in the service of the devil, and from vain glory. His views obtained such an ascendency, that it came to be a generally received opinion, that the hope of God's grace and eternal happiness depended on a belief in the doctrines of the church. Jerome adopted an intermediate principle, attributing to the heathens a willingness to receive the doctrines of the true church, should they become known to them. If this *fides implicita*, as it is called, be any thing real, it can only be a desire and endeavour to know the truth, and to act accordingly. Others have maintained the action of divine grace on the souls of heathens, independent of all instruction and knowledge on their part. The influence which the writings of Augustine exercised at the time of the reformation, and on the reformers, led to the reception of the dogma of the damnation of the pagans, which acquired a new development from the doctrine of predestination. Marmontel's *Bélisaire* was condemned by the Sorbonne, because it professed a belief in the salvation of the pagans.—See Meiner's *Allgemeine kritische Geschichte der Religion*; Schlegel, *Ueber den Geist der Religiosität aller Zeiten und Völker* (2 vols., Hanover, 1819); Constant, *Sur la Religion* (Paris, 1824.) It is estimated that the number of polytheists is about 466,000,000; that of monotheists, 362,000,000.

PAGE (from παις, child); a youth retained in the family of a prince or great personage, as an honourable servant, to attend in visits of ceremony, carry messages, bear up trains, robes, &c., and, at the same time, to have a genteel education. See *Chivalry*.

PAGLIAJO, or PAGLIACCIO; the name of a comic mask in the Neapolitan comedy. The word signifies *cut straw*, because this is what the poor fellow lies on. The German term *Pajazzo*, for the *Merry Andrew* in the circus, is a corruption of this word.

PAGODA; the temples of the Hindoos, and other heathen nations of Southern Asia. They are built of wood and stone, on an open place, which is adorned with obelisks, columns, and other architectural works. They are of great size and height, and embellished with great splendour. They are generally in the form of a cross, the four ends of which are of equal length, with a lofty, tower-like roof, divided into several compartments. The most remarkable pagodas are those of Benares, Siam, Pegu, and particularly that of Juggernaut (q. v.) in Orissa. In the interior of these buildings, besides altars and statues of the gods, there are many curiosities. The statues, which are likewise called *pagodas*, and which are often numerous, are usually rude images of baked earth, richly gilt, but without any kind of expression; sometimes clothed, and sometimes nude; standing or sitting with the legs crossed, and often of a colossal size. Small figures with movable heads, which are brought from the East, are also called *pagodas*.

PAINE, Thomas; a celebrated political and deistical writer, was born in 1737, at Thetford, in Norfolk, where his father, a Quaker, was a staymaker. He received his education at a grammar school in his native place, but attained to little more beyond the rudiments of the Latin language. He seems afterwards to have paid great attention to arithmetic, and to have obtained some knowledge of the mathematics. In early life, he followed the business of his father, and afterwards became a grocer and exciseman at Lewes, in Sussex, but was dismissed for keeping a tobacconist shop, which was incompatible with his duties. The abilities which he displayed in a pamphlet written to show the propriety of advancing the salaries of excisemen, struck one of the commissioners, who gave him a letter of introduction to doctor Franklin, then in London. The latter recommended him to go to America. He took his advice, and, reaching Philadelphia in 1774, in the following January, became editor of the Pennsylvania Magazine, which he conducted with considerable ability. Hostilities having commenced between the mother country and the colonies, he composed his celebrated pamphlet, entitled Common Sense, which was written with great vigour. The object of this tract was to recommend the separation of the colonies from Great Britain. For this production, the legislature of Pennsylvania voted him £500. He also received the degree of M. A. from the university of the same province, and was chosen a member of the American philosophical society. To these rewards was added the office of clerk to the committee for foreign affairs, which, although a confidential situation, did not justify him in assuming the title of "late secretary for foreign affairs," which he did in the titlepage of the Rights of Man. While in this office, he published a series of political appeals, which he denominated the *Crisis*. He was obliged to resign his secretaryship in 1779, owing to his having divulged some official secrets in a controversy with Silas Deane, whom he accused of a fraudulent attempt to profit by his agency, in conveying the secret supplies of stores from France. The next year, he obtained the appointment of clerk to the assembly of Pennsylvania, and, in 1785, on the rejection of a motion to appoint him historiographer to the United States, received from congress a donation of 3000 dollars. He also received 500 acres of land from the state of New York. In 1787, he embarked for France, and, after visiting Paris, went to England, with a view to the prosecution of a project relative to the erection of an iron bridge, of his own invention. This scheme involved him in pecuniary difficulties, and, in the course of the following year, he was arrested for debt, but was bailed by some American merchants. On the appearance of Burke's Reflections on the French Revolution, he wrote the first part of his Rights of Man, in answer to that celebrated work. The second part was published early in 1792; and, May 21, in that year, a proclamation was issued against wicked and seditious publications, alluding to, but not naming, the Rights of Man. On the same day, the attorney-general commenced a prosecution against Paine as the author of that work. While the trial was pending, he was chosen member of the national convention for the department of Calais; and, making his escape, he set off for France, and arrived there in September, 1792. On the trial of Louis XVI., he voted against the sentence of death, proposing his imprisonment during the war, and his banishment afterwards. This conduct offended the Jacobins, and, towards the close of 1793, he was excluded from the convention, on the ground of his being a foreigner (though he had been naturalized); and, immediately after, he was arrested, and committed to the Luxembourg. Just before his confinement, he had finished the first part of his work against revelation, entitled the Age of Reason, being an Investigation of true and fabulous Theology; and, having confided it to the care of his friend Joel Barlow, it was published; by which step he forfeited the countenance of the greater part of his American connexions. On the fall of Robespierre, he was released, and, in 1795, published, at Paris, the second part of his Age of Reason; and, in May, 1796, addressed to the council of five hundred a work entitled the Decline and Fall of the System of Finance in England, and also published his pamphlet entitled Agrarian Justice. Fearful of being captured by British cruisers, he remained in France till August, 1802, when he embarked for America, and reached Baltimore the following October. He had lost his first wife the year following his marriage, and, after a cohabitation of three years and a half, had separated from a second, by mutual consent, several years before. Thus situated, he obtained a female companion in the person of a madame de Bonneville, the wife of a French bookseller, who, with her two sons, accompanied him to America; but, whatever was the nature of this connexion (at the age of sixty-five), which has been differently represented, the husband and children, with the wife, became his chief legatees. His subsequent life was by no means happy; for, although occupied in various mechanical speculations and other engrossing pursuits, and possessed of decent competence, his attacks upon religion had exceedingly narrowed his circle of acquaintance; and his habitual intemperance tended to the injury of his health, and the ultimate production of a complication of disorders, to which he fell a victim June 8, 1809, in his seventy-third year. Being refused interment in the ground of the society of Friends, which favour he had requested before his death, he was buried on his own farm. The strong part taken by this extraordinary man in religion and politics has produced such extremes of praise and execration, that there exist few or no sources of unbiassed information, either as to his abilities or character, except his writings. That he possessed much native vigour of intellect, is indisputable, and, concentrated as it became by resolute exclusion of multifarious acquirement, and of even a moderate recourse to books, it assumed, in his writings, that piquancy, force, and simplicity, which, of all qualities, secure the largest share of general attention in popular controversy. The political pamphlets, letters, and addresses of Paine are numerous, and may be found in the collective editions of his works. They are also enumerated at the end of his Life by Sherwin. See his Life by Cheetham and Sherwin.

PAINTER'S COLIC. See *Colic*.

PAINTING, in a technical sense, is the art which represents the appearance of natural objects on a plane surface by means of colours, so as to produce the appearance of relief. As a fine art, its highest object is the beautiful, exhibited in visible forms by colours. The noblest field of the painter is that in which he vies with the poet, embodying ideas, and representing them to the spectator; but, as there are innumerable gradations in poetry, from the most elevated epic or drama to the shortest song, the excellence of which may consist merely in giving effect to a single sentiment or situation, comic, touching, &c., so pictures may present all varieties from the elevated productions of a Michel Angelo, in the *Capella Sistina*, to the image of a single dewdrop, a leaf, a cat in a Flemish piece. And just as taste may degenerate in respect to poetry, and prefer insipidity, bombast, or false glitter to true poetical beauty, so taste may degenerate, and has degenerated, in respect to painting; and a portrait, the greatest praise of which was that every single hair of the beard might be seen by a microscope, has been thought extremely "natural," and valued more highly than the most poetical compositions. It is but little praise to say of a picture, in this sense, that it is *natural*. We have spoken of this subject in the article *Copy*, where the reader will find some observations on the necessity of genius even in copying nature—of genius which can extract the essential, characteristic, and distinguishing. A painter must have the creative power of a poet. Why do we find so many portraits *appallingly* like the original, so as to be recognised at first glance, and which yet leave a disagreeable impression? The reason is that the painter copied with Chinese accuracy the form before him, but could not discover the spirit which ammated the form, nor reproduce the original, breathing with life. The case is similar with other objects of the art. A plant, a flower, a tree, may be so copied as to give the form accurately, and yet be destitute of the appearance of life. To produce this, it is necessary to have an eye for the soul of nature, to catch its breathing spirit. Still more necessary is the poetical spirit when the artist undertakes his noblest work—an historical painting. A Parnassus or School of Athens by Raphael, a Last Judgment by Michel Angelo, an Olympus by Cornelius, is a poem; and we see also the near relationship of poetry and painting from the circumstance of the two arts being so ready to afford each other assistance. The painter furnishes ornaments and illustrations to the works of the poet, and the poet often interprets in verse the beautiful productions of the painter. The great difference between them is that the painter can express a state of things only during a single moment, whilst the poet can unfold his scenes at pleasure; but, on the other hand, the painter can show much in a moment, and therefore make a deep impression, whilst the poet can give only word by word. Hence, also, the effect of the representation of the drama is so great, because it unites, as it were, poetry and painting—the ear and the eye both receive at once. The art of painting is divided, according to its subjects, into representations of man, of the lower animals, and of inanimate nature. The first are generally called *historical* paintings, even if their subject is not taken from history, and include allegorical and mythological, as well as real historical representations. Even battle pieces, scenes from common life, and portraits, have been classed under historical paintings. Historical painting is the noblest and most comprehensive of all branches of the art, because it embraces man, the head of the visible creation—man in all his relations. The historical painter, therefore, must study man in all his situations and relations, from the anatomy of his figure and the attitudes of the model to the most rapid and slightest expression of feeling and the ebullitions of deep and violent passion. He must have technical skill, a practised eye and hand, and must understand how to group his skilfully executed parts so as to produce a beautiful composition; and all this is insufficient without a poetic spirit, which can form a striking conception of an historical event, or create imaginary scenes of beauty. There is a remarkable passage in the works of the famous composer Maria von Weber. He speaks of the impression which a beautiful landscape makes upon him, a lovely or brilliant sunset, &c. Every thing, he says, presents itself to his soul in a musical form, in concords and discords. Whatever he perceives resolves itself into music, and thus becomes truly impressive to his soul. This is the case with every true artist. Speak of a noble idea to a sculptor, and involuntarily it will crystallize in a plastic form in his mind. Read a stirring passage of history or an interesting poem to a painter, and the whole will pass in pictures before his imagination. According to the branch of the art which he particularly cultivates will be the effect of particular passages. The comic painter will perceive the comic traits in such passages just as the satirist involuntarily seizes upon the contrasts and inconsistencies of life. This must be, to a great degree, the effect of natural constitution. No one can give himself this power; yet it must be cultivated, if the individual aims at being truly an artist; for, though a lively imagination may easily embody interesting scenes in visible forms, yet whoever has conversed with artists has found how difficult it is for a young artist to present upon canvas a picture which he had thought was distinct in the highest degree in his mind. To obtain this skill requires long practice in drawing and painting: the artist must have executed numerous studies, be familiar with the folds of drapery and the expression of feeling. But just as poets often imagine that they compose when their minds only connect unconsciously reminiscences of poems which have made a deep impression upon them, so painters too often believe they compose when they but render what they have seen elsewhere. Originality of mind is one of the first requisites of a painter.

Landscape painting is not of so vast an extent as historical painting, yet it requires much study and great natural talent. If landscapes are not copies of beautiful or favourite scenery, if the landscape painter *composes*, he wishes to convey his feelings expressively and harmoniously by means of natural objects, whilst the historical painter is much more *objective;* i.e. he represents ideas and feelings not so much with reference to their connexion with himself. The landscape painter generally, though not always, indeed, aims more at the mere expression of feeling; hence is more *subjective.* (See *Objective.*) The landscape may become allegorical and historical (in the meaning of the term in the art of painting) by being adorned with figures. Of the former the works of the living landscape painter Frederic are examples, and of the latter those of Claude Lorraine and Poussin. But the landscape painter must be careful not to disturb too much the effect of his landscapes by giving too great importance to the figures. The chief study of the landscape painter is the vegetable world, and none can make such use of the whole world of colours as he. Yet air, water, rocks, buildings, all require to be carefully studied by him. Flower and fruit paintings, still life, and arabesques, should be mentioned here. The first require, more than any other kinds of painting, the imitation of nature; in fact, to paint fruits requires little else than close copying, though even here, there would be a difference between a naked copy of a fruit made for a horticultural society and a fruit-piece painted as such by a Van Huysum. There is, even in fruits, an ideal beauty which must animate the painter, and the elements of which he must extract from nature. Arabesques are the wild creations of a rich imagination, and not unlike the unrestrained productions of a poetical mind in the Arabian Nights; and, with all their wildness, they can show the genius of a true artist, and ought to do so, if they claim to be considered works of art. How fanciful and lovely are some arabesques, where flowers and leaves entangle birds playing around human figures which end in plants and fruits!

The third chief division is *animal* painting, more circumscribed than either historical or landscape painting, yet a valuable branch of the art, whose highest aim is to represent with truth and life the character of the different species of animals, so important an element of surrounding nature. In some cases this branch approaches that of portrait painting; and, as we have said that the latter requires the power of reproducing not merely the bare forms of the individual, but his life and character, so it is, in some cases, with animals; and the portraits of favourite race-horses would poorly satisfy the connoisseur, did they not express the individual *character*, not merely the bare form of the horse. Other divisions of painting have reference to the technical part of the art. The encaustic painting of the ancients (see *Encaustics*) is not now known, though the modern *encaustics* approach near it. We should mention also painting on enamel, on glass, on porcelain, mosaic painting (q. v.) &c. In regard to the materials, there is painting in fresco, which belongs to painting in water colours, and miniature painting,

painting in pastel, and oil painting (q. v.). In reference to the ground upon which the picture is made, we have tapestry painting and wall painting, glass and porcelain painting, &c.

History of Painting.—Painting naturally divides itself into the ancient and modern, because there is a decided difference between the two periods of the art. Of an oriental art of painting before the Greek and Roman, not much is to be said, as respects those qualities which make painting truly a fine art. In a full history of painting, indeed, the considerable perfection to which the Egyptians had carried the art of representation, and the incomparable excellence which they had reached in some branches of the technical parts of the art, would require to be treated of. Art, in the true acceptation of the word, says a connoisseur, can be attributed only to the idealizing nations, who have borrowed their cultivation from the Greeks; beyond this limit we find only fantastic colouring to animate large masses or to supply the deficiencies in picture-writing, yet always calculated for a sense dull in respect to the beautiful, capable of being affected only by glaring colours, and subject to the rules of custom and worship. Only in countries where alphabetical writing existed, could painting elevate itself to a fine art. Wherever painting remained faithful to its first object,—that of conveying historical information,—it was obliged to sacrifice the beautiful to the significant. In Egypt and Mexico, the art of painting seems to have been chiefly intended to convey certain information by a bare imitation of objects. The early Hindoo was indemnified, by the variegated charms of the colours which his country afforded, for the want of purity and correctness of drawing. With the ancient Persians, also, the art of painting was undoubtedly what it is still, an irregular mixture of colours, fantastic images, without design and keeping. With the Egyptians, who so decidedly influenced the civilization of the Greeks, the art of painting was chiefly the offspring of religious wants, and stood in a close yet subordinate relation to sculpture and architecture. Egyptian pictures are found, of the most ancient times, on the walls of temples and in tombs, on the covers and coffins of mummies, and on the rolls of papyrus. Belzoni and Champollion agree as to the great beauty which these pictures, still brilliant on the walls, impart to the venerable monuments of Egypt. They are hieroglyphic or historical representations, painted works of sculpture, consisting of deeply cut lines, filled with colours or metals, as is the Isiac table—a most important monument of that species. The pictures on the walls and catacombs are colossal figures, painted with deep outlines, and surrounded by smaller pictures. In these also the claims of taste appear subordinate to the clearness of expression, and the durability of the colours, which are laid on without half tints and shades. At a later period, this Egyptian painting became common in Rome.—See among other works, Bottiger's *Ideen zur Archaologie der Malerei* (vol. i. Dresden, 1811). We find the eldest Greek school of painting on the coasts of Asia Minor and the islands. Fortunate circumstances here gave an early impulse to the art, the rudiments of which we find even in the Homeric times, in the coloured carpets and weavings. A representation of the defeat of the Magnesians (719 B.C.), by Boularchus, is mentioned as the first considerable picture; yet the accounts which we have of it are probably exaggerated. From this source the Greek colonies in Italy and Sicily are said to have received the germs of art. In Greece Proper, also, we find the art of painting originally a companion of sculpture for religious purposes. The idols of the original savage Greek were most probably coloured, so that, even in later times, it was long before the Greek could resolve entirely to give up colouring his statues. The last remnant of this was the colouring of the eyes, or the making them of enamel and stones. It was long before painting appeared in sacred pictures independent of the plastic art. The cornices of the temples, the *relievi* of the pediments, the galleries, &c. were originally painted. The proper art of painting must have proceeded from drawing, which commenced with fixing the outlines of shadows. From drawings the first step was to monochromes. The next step was to point the contours with one colour, then to represent the roundness of the body by light, shade, and gradation of colour. The most ancient remnants of this way of painting are the pictures on vases with black figures, similar to *silhouettes*. This manner was continued till late. The *style*, which was used in painting on coloured wax tables, prepared skins of animals, and smoothed tablets of boxwood, sufficed for the linear drawing, which, according to the anecdote of Apelles (q. v.) and Protogenes, must have reached great perfection among the Greeks. The *polychrome*, the drawing with different colours, supposed a more artificial instrument—the brush, moved by the hand with greater ease and freedom. Among the few artists of this period, whose names have come down to us, is Penænus, the cousin and assistant of Phidias. He was the first who contended for the prize of painting at the public games at Corinth and Delphi. His wall pictures in the Athenæum at Elis, his pictures in the temple of Jupiter at Olympia, the painting of the Pœcile in Athens, with the battle of Marathon, together with his portraits of the Greek and Persian generals in several pictures, have brought his name to us, as well as his painting and ornamenting of the statue of Jupiter. In general, we must observe that the Persian invasion of Greece makes an epoch in the art of painting, as in every other fine art in Greece. Perhaps it was at an earlier period that Mycon painted. He was the rival of Polygnotus, and also ornamented the Pœcile and the Theseum with representations of the battles of the Amazons and Centaurs. In Polygnotus of Thasos the art of painting attained independence about 420 B. C. His merit consists in a greater and livelier expression, in variety of drapery and symmetrical distribution of figures. In the distribution of light and shade, Apollodorus of Athens (404 B. C.) seems to have much advanced the art. Zeuxis (q. v.), about 378 B. C. elevated the art to beauty; he exhibited a canon of beauty in his famous Helen. His rival, Parrhasius of Ephesus, inclined more to grace, or the female expression of beauty. His pure proportions and his graceful colouring rendered him famous. Timanthes of Samos attained the highest degree of perfection in expression. Apelles (q. v.) connected with the utmost truth of nature a flattering colouring, and is called a master in portrait painting. After him painting sunk into artificial prettiness and insipidity, and even devoted itself to the representation of ordinary and vulgar subjects (*typarography*). Among the Romans, this art awakened little interest. At an early period, they knew only the paintings of the Etruscans; and Fabius, who was surnamed *pictor*, stands alone in the annals of Roman art. At a later period, the Greeks became the teachers of the Romans, when their civic virtue had already gone, and luxury had taken its place. Many monuments of the ancient art of painting have been discovered in the tombs and baths of Rome, Pompeii, and other places of Italy, which consist chiefly of fresco paintings and mosaic work. The number of existing monuments of Greek and Roman painting, however, is so small, that the inquirer must often be satisfied with mere conjectures, assisted by comparison with the works of these nations in other arts, and by the testimony of classic authors. Yet learned archæologists seem to acknowledge universally that the art of painting in antiquity always remained behind sculpture, as well in respect to the degree of its employment as of its perfection. Hence the well known opinion that painting was then more plastic. In consequence of a number of causes, both intellectual and physical, sculpture was more cultivated with the Greeks; and painting was influenced by this circumstance. The form, even in painting, predominated over the charm of colouring, and the expression which it conveys. The contour and the local colours seem to have been perfected in a great degree; the perspective much less. Some, indeed, have doubted whether the ancients had any knowledge of perspective; but, as perspective is not to be dispensed with in any representation on a plane surface, and as the ancients were well acquainted with geometry and optics, we must suppose them to have possessed, in some limited degree, the use of perspective. It is more certain that they were ignorant of *chiaro-scuro*. Their art of painting, indeed, was limited chiefly to the representation of historical situations and of animals; but landscape painting remained comparatively uncultivated, because this branch depends more than the others upon the perfection of colouring and the charm of *chiaro-scuro*.

For the history of the ancient art of painting, see, among other works, Junius *De Pictura Veterum* (edit. Grævius, Rotterdam, 1694); Durand's *Histoire de la Peinture ancienne* (after Pliny, London, 1725); Turnbull's *Treatise on Ancient Painture*, &c. (London, 1740); Vinc. Requeno's *Saggi sul Ristabilimento dell' antica Arte de' Greci e de' Romani Pittori* (new edition, Parma, 1787, 2 vols.); Andr. Riem, *Ueber die Malerei der Alten* (Berlin, 1787, 4to); Grund, *Ueber die Malerei der Griechen* (Dresden, 1810, 1811, 2 vols.); and Bottiger's works above-mentioned. Respecting the materials, and the technical part of painting among the Greeks and Italians, see Hirt, in the Transactions of the Berlin Academy, from 1798 to 1803, and Stieglitz, *Ueber die Malerfarben der Griechen und Römer* (Leipsic, 1817). Copies of antique pictures, particularly Roman ones, are found in the works of Bartoli and Bellori (e. g. *Recueil des Peintures antiques*, Paris, 1757 and 1784), in which several fresco paintings (e. g. those found in the *casa di Pito*) are described and copied; also in Carletti's and Pance's descriptions of the baths of Titus, and in the collection of the antiquities of Herculaneum, and Millingen's *Peintures antiques* (Rome, 1813).

The art of painting attained a greater perfection after the introduction of Christianity; nay, it became predominant over the plastic art. In Christian or modern times, sentiment, feeling, became a prominent feature of works of art; and these can be expressed much more easily and much more perfectly by colours than by the rigid forms of sculpture. For this reason the modern or Christian period has, in respect to the fine arts, been termed *romantic*, in contradistinction to *classic* (q. v.); and for the same reason the art of painting is called pre-eminently *romantic*, as is also the modern art of music. The baron de Rumohr maintains that the first application of the art of painting to Christian subjects took place in sepulchres. The later Grecian school of art is generally considered as the common parent of the whole modern art of painting in Europe. Properly speaking, it is the transition from ancient to modern art. With Constantine, modern art travelled to Constantinople, which he founded on the site of the ancient Byzantium (A. D. 330), and many pictures and statues accompanied him. (See Heyne in the *Comment. Soc. Götting.*, vol. xi.) In the later period of paganism, Greek and Roman art were so blended that no difference existed between them, until the conquest of Italy by the Lombards. In the pictures of the time of Justinian, the mechanical skill of former times was preserved, though the art, in its higher requisites, had deteriorated. (See *Byzantine Art.*) We often find mention in this period of works in mosaic, and encaustic painting seems still to have been in vogue. (See Fiorillo's *History of Painting*, vol. i., p. 30.) In the fourth century, and still more in the fifth, the custom of placing pictures of saints in the churches became more and more common, both in the Eastern and Western church. This custom inspired the artists with a new zeal, and the Christian religion, or, to speak more properly, the Christian worship, became the field in which the modern art grew and flourished. Not unfrequently the art contributed to the propagation of the religion. It suffered much, however, under the sway of barbarous tribes; but it never ceased entirely, and was fostered by the popes and bishops. Pictures of a religious kind were esteemed, particularly in the West, and many legends of their supernatural origin were diffused among the credulous. But from 726 the iconoclasts (q. v.) arose, and many Greek artists emigrated to Italy. Here the art was chiefly nourished; yet the painters diminished in number from the ninth century. In the thirteenth century began a new period of the art in Italy. The representatives of the Italian school are Michel Angelo, Correggio, Raphael, Titian, &c. Their endeavour was to present the beautiful in the noblest forms, and to transfer the ideal of the antique to the art of painting. (See *Italian Art.*) Another branch of the Byzantine art was the Rhenish or old Cologne school, which extends from the fourteenth century to the fifteenth. Its works have the decided stamp of the Byzantine school, which ceases with the brothers Eyck, who imitated nature. Their example was followed and improved upon by Hemling, Meckenem, Michel Wolgemuth, Martin Schon, and the painters of the sixteenth century, Luke of Leyden, Alb. Dürer, Schoreel, Mabuse, Bernard of Orley, &c. Some maintain, that there are but two schools essentially different,—the Italian and the Netherlandish,—while the German, French, and British artists belong to the one or the other, according to the character of their works. (For the Netherlandish school, which again was divided into the Dutch and Flemish, see *Netherlandish School;* see also *German* and *French Art*, in the articles *Germany*, and *France.*)—The true creator of modern landscape painting was Giorgione, born 1477. The Flemish painter, Mathew Brill, who is generally considered the founder of this branch, painted landscapes seventy years later.—See Deperthes's *Histoire de l'Art de Paysage depuis la Renaissance des Beaux Arts jusqu'au XVme Siècle* (Paris, 1822), and *Théorie du Paysage*, by the same.

The endeavours of more recent times do not form so connected a whole as the Greek art. For some time the art of painting had sunk from its highest destination; landscape and portrait prevailed, and in many countries continue to do so, while engravings multiplied the master pieces of former ages. In France, the revolution, and afterwards the warlike period of Napoleon, gave birth to several great historical paintings, some of which contain uncommon beauties, though in general the style is not popular out of France. The theory of painting has been much developed in its technical parts, i. e. drawing, perspective, colouring, &c. more than in its higher departments, which may be found treated of in the works of Cennini, Leonardo da Vinci, Mengs, Algarotti, De Piles, Watelet, Du Bos, Richardson, Reynolds, Dan. Webb, Lessing (in his Laocoon), Winckelmann, Fuseli, Fiorillo, Goethe. For the well known works of Vasari and Lanzi, see these articles. Rumohr's Italian Researches (Berlin, 1827, 2 vols.), and Memes's History of Sculpture, Painting and Architecture, in Constable's Edinburgh Miscellany are also valuable.

PAINTING ON GLASS. See *Glass*.

PAISIELLO, Giovanni; a celebrated singer and musician, was the son of a veterinary surgeon of Tarento, in Italy, where he was born in 1741. From the age of five to that of thirteen, he was placed by his father at the Jesuits' college in his native city, where his musical talents first exhibited themselves in the matin services performed in the chapel; and the chevalier Carducci, who superintended the choir, prevailed upon his friends to send him to Naples for further instruction in the science. Accordingly, in 1754, he was put under the care of the celebrated Durante, at the conservatory of St Onofrio, where his progress was very rapid; and, in 1763, his first opera (*La Papilla*) was performed, with great applause, at the Marsigli theatre, in Bologna. From this period commenced a long career of success, which attended him at Modena, Parma, Venice, Rome, Milan, Naples, and Florence, till, in 1796, he was induced to enter the service of Catharine II. of Russia, who settled on him a pension of 4000 rubles, with a country house and other advantages, in his capacity of musical tutor to the grand duchess. In Russia he remained nine years, when he returned to Naples, visiting Vienna in his way, and continued in the service of Ferdinand IV. till the court retired into Sicily. On the French revolution extending to Naples, Paisiello, who remained behind, received from the republican government, now established, the appointment of composer to the nation. On the restoration of the Bourbon family he fell into disgrace, but, at the expiration of two years, was restored to his situation. Napoleon afterwards sent him an invitation to come to Paris, which he accepted, but declined the directorship of the imperial academy, which was offered to his acceptance, contenting himself with that of the chapel. After remaining in the French capital nearly three years, his own health and that of his wife compelled him to return to Italy, where, on the expulsion of the Bourbons, he was made chamber musician to Joseph Bonaparte, receiving at the same time from Napoleon the cordon of the legion of honour and a pension of 1000 francs. In this situation he continued under Murat, and became a member of many learned and scientific as well as musical societies, especially of the Napoleon academy of Lucca, the Italian academy of Leghorn, and the French institute. There are few composers who have given greater proofs of industry than Paisiello, or whose works have met with greater success all over Europe. His operas, serious and comic, exceed seventy, besides a great variety of ballets, cantatas, and some sacred music of great merit. He died in 1816, at Naples, and was honoured with a public funeral. Simplicity, elegance, and correctness are the characteristics of his style, while his grace and freshness of melody, in which he has far surpassed most other composers, have made him a model to numerous imitators.

PAISLEY; a large manufacturing town of Scotland, in Renfrewshire, situated on the banks of the White Cart river, about seven miles south-west from Glasgow. It is a place of considerable antiquity, but its rise to importance, as a manufacturing town, is only of recent date. In 1164, a priory for Cluniac monks was founded here by Walter, lord high steward of Scotland. The institution was dedicated to St James and St Mirren, the latter a Scottish confessor. It was afterwards constituted an abbey; and the lands belonging to it were, by king Robert II., a descendant of the founder, erected into a regality, under the jurisdiction of the abbot. The name of the religious establishment was *Passeleth* (modified to Paisley), supposed to be derived from the British words *Pasgel-loith*, which signify "the moist pasture ground." The abbey had under its patronage the following churches: Innerwich in Lothian, Ledgerwood in the Merse, Rutherglen, Carmunnoch, Dalziel, Riccarton, Craigie, Dundonald, Monkton, St Quivox, Prestwick, Corsby, Cumbray in Bute, St Oswald, Turnberry, Roseneath and Kilpatrick in Dumbartonshire, Kilcolmonel, Kilkerran, and Kilfillan, in Argyleshire, Cathcart, Eastwood, Mearns, Neilston, Paisley, Kilbarchan, Lochwinnoch, Innerkip, Erskine, Houston, and Kilellan, in Renfrewshire. The monks of the abbey wrote a chronicle of Scotland, called the Black Book of Paisley, an authentic copy of which was carried out of Sir Robert Spottiswood's library by general Lambert to England, and is now preserved in the Cottonian library. After the reformation, the abbacy was secularised, and in 1587 erected by James VI. into a temporal lordship, in favour of lord Claud Hamilton, third son of the duke de Chatelherault, who thus became lord Paisley. The monastic buildings were much enlarged and improved by the abbot, George Shaw, who, in 1484, encompassed the precincts of the monastery with a wall of hewn stone. There is hardly a vestige of the convent now existing, and modern buildings have been erected on the site of the gardens; but the nave of the abbey church (now used as a parish church), with its aisles, is still standing; and from these remains, it appears to have been a noble structure, in the decorated Gothic style. It was repaired about fifty years ago, in an elegant and substantial manner. At its south-eastern angle is a vaulted sepulchral chapel, which is the burying-place of the earls of Abercorn, descended from lord Paisley above-mentioned. It contains the monument of Margery, the daughter of Robert Bruce, who, by her marriage with the founder of the abbey, conveyed the hereditary right to the crown of Scotland to the family of Stuart. This chapel is also distinguished by a very fine echo.

More than a hundred years ago, when Crawford wrote his History of Renfrewshire, Paisley seems to have been an inconsiderable town; for he describes it as consisting of only one principal street, about half a mile in length, with a few lanes and old buildings on the west bank of the Cart. Since that time, it has gradually increased in size, and now consists of two portions, the burgh, or Old Town, extending to a great extent along the southern slope of a ridge of hills to the west of Cart; and the New Town, on the eastern side of the river, communicating with the Old Town by three stone bridges. This latter district was feued or leased by the earl of Abercorn about 1770, and now comprises a number of handsome streets. The length of Paisley and suburbs, from east to west, is about two miles; while its breadth, from north to south, is only about seven furlongs.

In 1488, Paisley was erected into a burgh of barony by James VI., under the superiority of the abbot, George Shaw; and it is governed by a provost and three bailies, in the commission of the peace, a treasurer, a town-clerk, and seventeen councillors The revenues of the burgh amount to about £2500 a year. The town formed a part of the abbey parish of Paisley previously to 1738, when the magistrates and council purchased the right of patronage from the earl of Dundonald, then superior of the lordship; and, in 1782, it was divided into three distinct parishes, encompassed on all sides by the original parish of the abbey. They are in the presbytery of Paisley and synod of Glasgow and Ayr. There are now six churches belonging to the establishment, the most remarkable of which are the High church, the Low church, St George's church, and the Middle church. There are also churches or chapels for the Episcopalians, the Roman Catholics, the Secession, the Baptists, the Cameronians, the Communion of the Relief, the Independents, and the Methodists; besides several other denominations of Christians. Here is a public grammar-school; and in each of the parishes is established an English school, to the emoluments of the master of which is added that arising from the office of session-clerk of his parish. Besides these, there are other seminaries for the education of poor children; and among the charitable institutions are an almshouse, rebuilt in 1724; a house of recovery or infirmary; a town hospital, a capacious but plainly built edifice; and a poor house, a large building, in an open situation opposite the quay, supported by a small assessment on the inhabitant housekeepers.

Among the finest public buildings of Paisley is the castle, founded in 1818, a Gothic structure, which stands in an open space on the western bank of the Cart, and which comprehends a court-house, council-chambers, prison, bridewell, and a number of offices for different departments of public business. The market-day of Paisley is Friday; and fairs, each of three days' duration, are annually held there, beginning on the third Thursday of May and February, and the second Thurday of August and November; but the August fair, called the St James' Day fair, is the most considerable, being distinguished by horse-racing and general holiday keeping.

The country around the town is called the *parish of the abbey of Paisley*, the extent of which is about nine miles in length, and from half a mile to three miles in breadth. The surface is irregular, swelling, particularly in the neighbourhood of the town, into gentle eminences. Towards the north of the town it is remarkably level, having formerly been a morass, but now cultivated. On the opposite side of Paisley, the ground is hilly; one of the eminences, called *Stanley brae*, being 680 feet above the level of the sea at flood. The soil varies considerably; but is chiefly light loam, rendered tolerably productive by long culture, but wet and cold, from having a bottom of close impervious till.

The first species of manufacture for which Paisley became celebrated, was that of linen thread; and the origin of the trade in this commodity, is attributed to Miss Catharine Shaw, daughter of the laird of Bargarron, who, a few years previous to the union of Scotland and England, had acquired great dexterity in the spinning of fine thread. Some of her thread was taken to Bath by lady Blantyre, and disposed of to the lace manufacturers there at a very high price. The superiority of the article created for it a great demand; but there being no free trade between the two kingdoms at the time, considerable difficulties were opposed to the traffic, which were, however, in some measure overcome by the intervention of mercantile agents in Holland. The facilities for trade consequent upon the union, soon rendered the spinning of thread an extensive and lucrative branch of trade to the town. Besides the introduction of the thread manufacture, Miss Shaw is otherwise noted in the annals of Paisley: In 1697, when she was a girl of only eleven years of age, she imagined, or feigned that she had been bewitched, and no less than twenty persons were implicated with the offence, five of whom suffered death at the Gallowgreen of Paisley. Even at the era of the union, according to Crawford, Paisley manufactured some linen and muslin, but the produce could not be very extensive, as we find that, in the year 1727, twenty-one years subsequent to the union, not more than 85,527 yards were manufactured for sale in the whole shire of Renfrew. The extension of trade after the Union induced many persons to settle in Paisley, for the purpose of manufacturing. These persons belonged chiefly to a class of men, formerly very numerous and useful in the kingdom, called *pedlars*, who were, in fact, travelling merchants. These persons bought the articles made in Paisley, and disposed of them to the merchants in England. Ere long, the enterprising merchants of Glasgow seeing the lucrative nature of such a trade, bought largely from the Paisley manufacturers, and sent the articles for sale to the London or some foreign market. As trade increased, the capital of the manufacturers increased; and they began so early as 1750 to trade directly with a London house, and to add to the variety of their articles of produce. The year 1759 is an important era in the commercial history of Paisley. It was at this time that the manufacture of silk gauze commenced, in imitation of the fabrics at that period manufactured at Spittalfields; and from the cheapness of labour in Paisley, as well as from the care and superior taste displayed by the manufacturer and weaver, the Paisley gauzes soon gained an ascendency in the market, so much so, indeed, as to induce several of the Spittalfields manufacturers to remove to Paisley. The trade extended rapidly, so that in 1781 there were not fewer than twenty mercantile establishments in the town of Paisley, some of which had warehouses in London, Dublin, Paris, and other large towns on the continent. At this period, 5000 looms were employed in weaving silk gauze; and the value of this manufacture alone for that year, has been estimated at £350,000 sterling. The manufacture of silk ribbons, and some new silk fabrics, was introduced in 1772; and such was the extent of trade, that Wight has stated that the manufacturers of Paisley drew for silk gauzes in each of the years 1775 and 1776, the sum of £300,000, and upwards of £100,000 for other articles. The value of this manufacture of silk and linen gauzes, thread, and other kinds of goods, amounted to £579,185 : 16 : 6 sterling. In the silk gauze manufacture of Paisley, there were employed 26,484 men, women, and children. (See Brown's History of Glasgow, p. 247, vol. ii.) From this period, the silk gauze manufacture of Paisley began rapidly to decline, and the current of industry was entirely changed in its direction by the introduction of the cotton manufacture. It was about the year 1782, that some cotton spinning factories were erected in the shire, and the muslin manufacture began to form a new and important feature in the commerce of Paisley. The following statement shows the variety and extent of the manufactures here in 1789: that of silk gauze employed 10,000 persons, and produced goods worth £350,000; that of lawns, cambrics, thread, gauze, and muslins, employed 12,084 persons, and produced £180,385; that of white thread employed 4809 persons, and produced £70,000; that of soap and candles produced £48,000; that of ribbons, &c., £2000; the tanneries, &c., £10,000; whence the total value of the manufactures appears to have been £660,385.

From a very careful survey we are enabled to state that in November, 1836, there were in Paisley,—

Manufacturers, ...		148
Harness weavers,	4162	Total 5270
Plain weavers, .	1108	

Total employed by Paisley houses in twenty-six villages, in Renfrew and Ayrshire, and in the city of Perth,	4147
Total weavers at Paisley work.	9417

Such is the expedition now attained in finishing the shawls after they come from the loom, that in several establishments it is not uncommon for the cloth to be taken from the loom, cut, washed, dried, calendered, and packed for London in three hours afterwards.

The muslin trade has been carried on in all its varieties, and with great vigour, in Paisley; and this place has been regarded as the original seat of that manufacture; although it cannot be disputed, that the first muslin web ever made in Scotland was begun and finished in Glasgow, by Mr Monteith. Every species of plain and figured goods, composed of silk and cotton, continue to be manufactured here; and Paisley has become celebrated throughout the world for the variety and richness of its fancy fabrics. It is a well known fact, that although Edinburgh was for a long time celebrated for the superiority of its shawls, yet a very great number of these were woven in Paisley for Edinburgh houses. About twelve years ago, the Canton crape shawls began to be imitated here; and with such success has this branch been prosecuted, that the Paisley shawls must now be regarded as at least equal to the Chinese originals. A very beautiful species of shawls, called Chineil, began about the same time to be made here, which have an appearance resembling the costly productions of the East. Each of these shawls is composed of several webs of different colours interwoven with great ingenuity, so as to produce the most beautifully variegated patterns. This manufacture, which is entirely of Paisley origin, will be fully described under our article *Weaving*.

The Paisley manufacturers have of late paid considerable attention to the formation of woollen shawls, and fabrics of Thibet and Merino wool have been manufactured in this town, which have met with a ready acceptance in the market. Within these two years, woollen shawls of a coarser texture have begun to be manufactured, in imitation of the tartan shawls made at St Ninians. At present (December, 1836), the demand for the richer fabrics of the Paisley manufacture has suffered a temporary depression, which must have thrown many workmen idle, had not a late improvement in the figured muslin wrought by harness been made, which has opened a new line in the manufacture. In 1832, very considerable distress was felt among the young females of Paisley, in consequence of the introduction of a newly invented machine from France, for clipping or cutting away the superfluous woof from the fabrics woven in the harness loom. Several hundred women had been constantly employed for this purpose, previous to this date; but the economy of cost to the manufacturer was so great, by the employment of the clipping machine, that its rapid introduction deprived these women of their ordinary means of living. But the evils arising from this, as well as all other machinery for diminishing the demand for human labour, were only temporary, and the women ere long were employed in other branches of industry. In one establishment, for instance, about 150 are engaged in embroidery. The machine for clipping will execute the work as well as by the hand, for about one-ninth part of the cost. The diminution of the cost of the manufacturer must enable him to bring his articles to market at a lower rate, and an increased demand must be the natural consequence. Add to this, the still further diminution of cost of production caused by the introduction of machinery, for dispensing with the attendant called the drawer or drawboy in harness weaving. The weekly wage of a drawer may on an average be reckoned at 3s., which forms a very considerable item in the cost of manufacture. A machine for performing the same work was many years ago invented by M. Jacard, a native of France, which, however, from difficulties in its management, was very partially used even in Paisley. Early in the present year Mr J. Morrison patented a machine somewhat on the same principles as that of Jacard, but so much improved and extended in its operations, that it may be fairly regarded as a new machine. The ingenuity of Mr Morrison has totally overcome all objections to the employment of the drawing machine. Mr M. has also invented a machine for punching the patterns, which exhibits a highly ingenious application of lever power. These drawing machines are daily gaining ground, and from their unerring precision, and the economy of their use, they must ere long become universal in the harness manufacture. Such is the perfection of this machine, that its application to power looms cannot be far distant. Much improvement in the manufacture of figured shawls may be confidently expected from the establishment of a school of design at Paisley, in which young men will be taught pattern drawing, as in the school at Lyons. Preparations for the establishment of this seminary are already nearly matured. Calico printing, tape and thread manufacture are carried on here, as also cotton spinning, and power loom weaving. Paisley has been long celebrated for its distilleries, and there are also soap and tan works. The annual value of the Paisley manufactures may be estimated at nearly two millions sterling. The river Cart is not navigable by vessels of any considerable burden, and although it has lately been the subject of public speculation to deepen it, yet the great expense requisite for such an undertaking renders it probable that it will be long ere that be accomplished. A much more reasonable plan for facilitating the commerce of the town is now in progress, i. e. a railway between Paisley and the Clyde at Renfrew, and it is besides in contemplation to form a railway between Greenock and Glasgow, through Paisley, with branches to Kilmarnock, &c. For an account of the canal between Paisley and Glasgow, see our article *Canal*.

Paisley is entirely a manufacturing town, and owes its increase and importance to the skill, enterprise, and industry of its inhabitants. The working classes of the town and neighbourhood have long been distinguished for their general intelligence on most branches of useful knowledge, and particularly for the lively interest they take in passing political events. Paisley has given birth to Alexander Wilson, the celebrated American ornithologist, to Robert Tannahill, the Scottish song writer, and to one of the most eloquent and witty authors of any age, Professor Wilson of Edinburgh. The progressive increase of the town will be best seen from a statement of its population at different periods. In 1695, the number of its inhabitants was about 2200; in 1755, they amounted to 4600; in 1781, they had increased to nearly 16,000; in 1791, to 19,903; in 1801, to 24,341; and in 1821, to 38,500. In 1831, the population of the town parishes was 31,460; of the Abbey parish, 26,006; total, 57,466. See *Renfrewshire*.

PALADIN. This was the name formerly given to the knights-errant, who wandered about the earth to give proofs of their valour and their gallantry. They obliged every knight whom they met in their travels to acknowledge their mistress as unrivalled in beauty, or, in case of refusal, to engage in mortal combat. The first adventurers of this kind mentioned in the old romances belong to the round table of King Arthur in England; the most famous of them was the beautiful Lancelot of the lake. After him Amadis of Gaul held a high place among the knights errant; and, still later, the paladins of Charlemagne, the most distinguished of whom was his (so called) nephew, the brave Roland, or Orlando.—The history of knight-errantry is as much mingled with fabulous stories as the accounts of the Grecian heroes. The name of *paladin* is derived either from *palatinus*, or from *palus*, a pointed piece of wood, a wooden spear or lance, which these knights commonly carried as their weapon, together with the sword.

PALÆMON. See *Melicerta*.

PALÆOGRAPHY, the science of deciphering ancient written monuments, not only teaches how to read old writings, but to separate their constituent parts; to ascend, as far as possible, to their sources, and to follow all the changes which one and the same writing may have gone through by the lapse of years, showing likewise the alterations which several kindred dialects have undergone after their separation from the common stock. This is the definition given by Kopp, whom Germany now esteems the first among her palæographers. The province of palæography extends, therefore, to every thing written, and is consequently increasing every day by the new discoveries of written monuments in countries formerly inaccessible. It is distinguished from diplomatics, however, by the circumstance that the latter has to deal with public and official documents illustrative of history since the fifth century. Palæography first received a scientific form from Bernard de Montfaucon's *Palæographia Græca*. Barthélemy, the author of the Travels of the Young Anacharsis, by his *Essai d'une Paléographie Numismatique* (*Mem. de l'Académie des Inscriptions*, *tome* xxiv. 30), put the palæography of the Semitic languages on a footing corresponding to that of the classic. Hegel, in his palæographic fragments (On the Writing of the Hebrews and Greeks, Berlin, 1816), and Hartmann of Rostock in his Investigations concerning Asiatic Monuments, have greatly enriched the science. The greatest difficulty has been found in those abbreviations which in Latin documents have been known by the name of *notæ tironianæ*, and were in use until the tenth century. After many unsuccessful attempts, they have been wonderfully explained by the sagacity of Kopp. This study has been a favourite one in France since the time of the benedictine St Maur. The *Corpus Inscriptionum* of Bockh, which is appearing at Berlin, is expected to throw much light on the inscriptions of ancient Greece.

PALÆPHATUS; an ante-Homeric poet of Athens. Another Palæphatus, probably of the fourth century (according to some, of Athens; according to others, from Paros or from Priene), left five books On Incredible Things, in which mythuses are explained allegorically. It is generally printed together with Esop. The best edition of the separate work is by Fischer (Leipsic, 1789).

PALÆSTRA. See *Gymnasium*

PALAFOX. See *Saragossa*.

PALAIS ROYAL, in Paris. This palace, with its gardens, its courts, its galleries and arcades, is the central point of pleasure in Paris. It was built in 1663, by cardinal Richelieu, who gave it the name of *palais cardinal*. He bequeathed it to Louis XIII., after whose death Anne of Austria entered it, in 1642, with her infant son, Louis XIV., quitting the Louvre, where she had previously resided. From that time it has borne the name of *palais royal*. Louis XIV. resigned the occupation of it to his brother, and at last gave it to his grandson, the duke of Chartres. Since then, it has remained in the family of Orleans, which made it their abode until 1791, and returned thither in 1816. Frenchmen who remember it as it was in the last century, speak with rapture of the great avenue of chestnut trees, which formerly extended the whole length of the garden. From eleven o'clock in the morning it was crowded with people; there were seats on each side, which were always filled with men of all ranks and all countries. In the centre was a tree—the famous *arbre de Cracovie;* under its shade the politicians decided the fate of the world: this was ever the most liberal spot in Paris. The trees were afterwards superseded by rows of booksellers' and jewellers' shops, gambling and coffee houses, theatres, and other establishments of the kind. This assemblage brought a rich revenue to the duke. The walkers avenged themselves with jokes, for the loss of their trees: they called the duke the *egorgeur des ombres*. In three years, two of the great wings were finished, the arcades of which were immediately crowded with splendid shops. New rows of trees were planted, but they did not flourish, probably on account of the dust raised by the crowd, which perpetually throngs the gardens. The *théâtre Français* was also placed in the *palais royal*, and yet remains there. During the revolution, the duke called this palace the *palais égalité*. In 1802, it had, for a short time, the name of *palais du tribunat*. The principal entrance to the *palais royal* is upon the *rue St Honoré*. The front is seen from the *chateau d'Eau*—a building containing the reservoirs of water for the Tuileries and *palais royal*. The two front wings, with Ionic and Doric pillars (each of which is adorned with a pediment and statues by Pajou), are joined together by a Doric portico. Three gates afford entrance to the palace. Upon entering the first court, the two wings of the buildings here appear adorned with Ionic and Doric pillars. Between them is the outer court, which leads from the first court into the second (*la cour royale*). Massive Doric pillars arise on each side, but their effect is destroyed by the number of the booths and shops, which are crowded together about them. The second court is separated from the garden by wooden galleries, and there the booksellers and pamphlet sellers, the milliners and riband venders, exhibit the articles in which they deal. Through this *galerie de bois* one enters the fairy land of the garden, surrounded by its splendid arcades. This garden has no shade; it is stiff and dry; the ground is hard-pounded gravel; the trees are small and quickly withered, being struck by the reflected rays of the sun. But the effect of the arcades and pavilions, especially in the evening, when they are brilliantly illuminated, is truly splendid. The two side wings have a length of 700 feet, and the opposite ones a length of 300. They are all of similar form. Fluted pilasters, of the Composite order, surround the building, and support a balustrade, upon which are vases, which cover its whole length. On the level ground, a vaulted gallery surrounds the building, with 180 arcades, between every two of which is suspended a large lamp. They terminate, on both sides, in two vestibules, adorned with magnificent columns. The intervals are ornamented with festoons and bass-reliefs. Over the arcades is the first story, with high windows, proportionate to the building; above this, the second story, with lower windows; and above this, the windows in the roof, before which runs the terrace. Here gratifications are held out to every appetite and desire. The book shops afford the oldest and the newest, the most scientific, and the most frivolous books. Celebrated and unknown writers here meet, and the place swarms with critics and amateurs. A splendid jeweller's shop, which fills three arcades, is, in the evening, lighted up by more than fifty wax lights, and large mirrors increase the light and the play of colours. The elegant shops of the milliners afford all that fancy can create with riband and gauze, with flowers and feathers. One lofty arch glitters with brilliant silk stuffs; another with the finest cloths, the richest Eastern shawls, or the most delicate embroidery. Shops with watches of every kind alternate with others filled with beautiful porcelain: here are ornaments of Wedgewood ware and of diamonds; there are gold watch-chains, sword-hilts of polished steel or of silver; here are exhaled the most delicious perfumes; there, beautiful miniature pictures or splendid engravings attract the eye; bonbons and mathematical instruments, playthings and arms, are exhibited in beautiful variety; in one place we meet with a shop which contains all articles of dress, made in the most exquisite taste; in another, with luxurious furniture. Lottery-ticket sellers and money-changers, seal-engravers and pastry-cooks, restorateurs and fruit venders, are all crowded together. The choicest delicacies, from the sea and from the provinces, are collected in the celebrated *boutique au gourmand*, while the best ice is to be found in the *café de foi*, where assembles the most select company. In the *café des aveugles* is heard the gayest music, executed by blind persons, while loud cries and reckless gayety resound from the *café du caveau* and the *café du sauvage*. The *café du ventriloque* attracts many guests to witness the performances of its proprietor; and the *café des mille colonnes*, to view its thousand brilliant mirrors. All the articles for sale in the *palais royal* are dearer by one half, than in the rest of Paris. Every thing here appears to be intended for the gratification of the senses: nothing spiritual, pure, or natural finds a congenial atmosphere, and the uncorrupted stranger soon wishes himself away from this intoxicating labyrinth. But the upper halls are still more seducing and dangerous than the galleries. Here, in the first story, between the rich shops and the brilliant halls of the *restorateurs*, are the infamous gambling-rooms, where, at the green tables, *roulette* and *rouge et noir* stand ready for their victims. In the attics live the shopkeepers, whose places of business are below; and also a few public girls, under the charge of older women, though neither in such numbers nor so well educated as they are represented in the accounts of most travellers. At every hour of the day, men are to be found walking in the *palais royal*. Early in the morning, the industrious tradesman passes through it to breathe the fresh air before he goes to his labour. The inhabitants are yet plunged in sleep. At eight o'clock the shops are opened, and at nine the coffee-houses begin to fill; the newspaper-readers assemble, and the groups collect. From twelve to two, it is the rendezvous of the gay world. The benches are insufficient; hundreds of straw-bottomed chairs, which are piled up under the trees, are brought forward, and let for two sous each. From two to five, the crowd diminishes, but the nursery maids, and mothers, with their little children, employ this interval; soon, all those who frequent the theatre pass by in crowds. About eight o'clock, the public women appear in the garden: at a later hour, they are found, for a short time, in still greater numbers, in the galleries, which the police allows them for their walks. The brilliant illumination now begins, and the hours, until eleven, are noisy and variously employed. After eleven, the noise gradually ceases, and at twelve the gardens are empty, and every thing is still. The walks are watered three times a day, so that the dust is not troublesome. A pleasant coolness is preserved by a large fountain, in the middle of the garden, with a *jet d'eau* in twenty-four streams. From the gardens one can also pass, through a second gallery, into the court, where the most beautiful flowers and foreign plants are to be had. Another entrance leads, by an open staircase, into the splendid *rue Vivienne*. The *palais royal* is the richest and most faithful picture of the frivolity and luxury, of the sensuality and corruption, of modern times.

PALAMEDES; one of the Grecian heroes at the siege of Troy, said to have been the son of Nauplius, king of Eubœa, and of Clymene. After having, with the other Grecian ambassadors, in vain demanded of Priam the restitution of Helen, and having discovered the feigned madness of Ulysses, by which this prince had hoped to escape participation in the Trojan war, he joined the army of the Greeks. In the councils of the heroes, he opposed the measures of Agamemnon, and, for a while, took his place as commander-in-chief. Homer, however, says nothing of this conduct of Palamedes. The accounts relating to him, and especially to his death, are very contradictory. The most common are, that Ulysses buried a treasure in his tent, and, by a forged letter, brought him under suspicion of a correspondence with Priam, whereupon he was stoned to death as a traitor. To him is attributed the invention of dice and of dramatic entertainments, or, at least, the introduction of the latter, and also the invention of arithmetic, and of weights and measures. He is commonly said to have added four letters (θ, ξ, φ, χ) to the old Greek alphabet of sixteen letters, introduced by Cadmus. A knowledge of astronomy and of medicine is also ascribed to him. He is likewise said to have written poems. According to general tradition, he played a distinguished part in the early history of Grecian improvement.

PALANQUIN, or PALANKEEN; a sort of litter, or covered carriage, used in the East Indies, and borne on the shoulders of four porters, called *coolies*, eight of whom are attached to it, and who relieve each other. They are usually provided with a bed and cushions, and a curtain, which can be dropped when the occupant is disposed to sleep. The motion is easy, and the travelling, in this way, is safe and rapid.

PALATINATE, UPPER and LOWER, were two countries of Germany. (For the derivation of the name, see *Palatine*.) The Upper Palatinate was a territory of 2756 square miles, bordering on Bohemia and Bavaria. Amberg was the seat of government. Until 1620, the Upper and Lower Palatinate belonged together; but when the elector Frederic V. (son-in-law of James I. of England), after the battle of Prague, was put under the ban of the empire, the Upper Palatinate was given to Bavaria. The Lower Palatinate, or Palatinate on the Rhine (1590 square miles, with 305,000 inhabitants), was situated on both sides of the Rhine. This territory is, in spite of the horrible devastations which it has suffered from time to time by war, one of the most productive parts of Germany. In consequence of the great changes in Europe, after the first French revolution, the country which formerly constituted the Palatinate on the Rhine, is now possessed by Prussia, Bavaria, Baden, Hesse-Darmstadt, Nassau, &c.

PALATINE (from *palatium*, the word used in the middle ages to signify the *royal palace*) was originally applied to persons holding an employment in the king's palace, and afterwards to one invested with royal privileges and rights. (See *County Palatine*.) In Hungary, *palatine* signifies the highest baron of the realm, or *magnate* (q. v.), chosen by the diet from among four *magnates* proposed by the king (the emperor of Austria), in order to represent the latter, in all important affairs. He is president of the council of regency, of the highest court of appeal, and has the highest rank of all the *magnates*, except the archbishop of Gran. There was none from 1765 to the death of Joseph II. (1790). Leopold II. yielded to the complaints of the Hungarians, and appointed a new one. The archduke Joseph Anthony, brother to the emperor Francis, born 1776, is the present palatine.

PALATINE, COUNT (*comes palatinus*), was the judge and highest officer of the Franconian and German kings. Every regal castle (*palatium;* in German, *Pfalz*), of which there were some in every part of the realm, had such an officer. The count of the palace of Aix-la-Chapelle (*archisolium totius regni*) was the first among them, and one of the first crown officers of the empire. The county palatine on the Rhine originated from the dotation to him. Each of the ancient duchies had also its county palatine. At a later period, the German emperors appointed *comites S. palatii Lateranensis*, to exercise certain imperial privileges, also, in the territories of the members of the empire. There were two classes of them, one with more power (*comitiva major*) than the other, authorized to raise to nobility, and confer the *comitiva minor;* the other had the power to make doctors and notaries, to legitimate natural children, confer coats of arms, &c. At present, the whole dignity of the palatine conrt is a mere antiquated form.—*Palatium* was used, in many countries, for the regal palace and the privileges connected with it; hence, in England, the counties palatine. See *Palatine*.

PALATINE HILL, PALATIUM. See *Rome*.

PALE, THE ENGLISH. See *Ireland*.

PALEMBANG. See *Sumatra*.

PALENQUE; a village of Central America, in the state of Guatemala, about 215 miles N.W. of the city of Guatemala. It is remarkable for the ruins of a great city which it contains, and which, lying in the centre of an immense wilderness, were not known to the Europeans till 1750, when they were discovered by some Spaniards. In 1787, captain Del Rio was employed, by the king of Spain, to examine them. The ruins extend along an elevated ridge, for the distance of about twenty miles, and consist of bridges, aqueducts, palaces, temples, &c., all of stone; from which circumstance the Spaniards call them *casas de piedras*. The London Literary Gazette of October 15, 1831, contains a letter from Galindo, commander of the neighbouring district of Peten, giving an account of his investigations on the spot. The ruins, according to him, contain numerous figures of men and animals, in relief, some of colossal size, together with paintings, and what he conceives to be characters representing sounds, or a phonetic alphabet, of which no traces have been elsewhere found in America. There is no tradition, among the natives in the vicinity, as to the time of their origin or their builders. See *Writing*.

PALERMO, the capital of the kingdom of Sicily, and of an intendancy of the same name, is situated on a small gulf on the northern coast of Sicily; lat. 38° 6′ N.; lon. 13° 21′ E. It is a well built and strongly fortified city; the harbour, into which 500 foreign ships enter yearly, is protected by two strong castles. The number of inhabitants was formerly 200,000, but the population has declined, and is now only 163,300. Among the principal buildings of the city are the palaces of the viceroy and of the archbishop, the great hospital, the convent of St Clara, the professed house of the Jesuits, the archi-episcopal cathedral, the council-house, and several splendid churches and gates of marble and alabaster. The two principal streets cross each other in the centre of the city, and form a regular octagon (the *piazza villena*,) which is embellished by handsome buildings. The streets are well paved and lighted. The university (*Accademia Reale*) has a respectable library, an observatory, and a cabinet of coins. There is also an academy of sciences in Palermo. The exports are almost all the productions of the island,—wine, oil, fruits, wheat, manna, &c.; the imports are colonial goods and manufactures. The silk of Palermo is cultivated in the neighbourhood, and chiefly exported raw. Palermo has frequently suffered from earthquakes, principally in 1726 and 1823. See *Sicily;* and *Naples and Sicily, Revolution of*.

PALES; one of the rural deities of Italy, the giver of good pasturage, and the protectress of the flocks from contagion and wild beasts. She was represented as a pastoral goddess, with a staff, and a crown on her head, and was worshipped, sometimes under the trees, sometimes in temples. Her festival was celebrated on the same day as the anniversary of the founding of Rome (April 21.) The offerings to her were milk and cakes. Some authors represent Pales as a male deity, the son of Jupiter.

PALESTINE (*Falesthin*,) called the *land of promise*, on account of the promise given to the posterity of Abraham, embraces the coast of Syria on the Mediterranean, from Lebanon south to the limits of Egypt, and was one of the most fertile countries of the old world. Wine, salt, wild honey, balsam, olives, dates, figs, and pomegranates, with large flocks and herds, were its productions. The alternation of mountain and valley, the temperate climate, the numerous streams, the rains of spring and autumn, caused its fertility. Its present barrenness arises from the inactivity of its inhabitants, who obtain their living either from the pilgrims, or as robbers. It was called, after the ancestor of its inhabitants, *Canaan*, when Abraham travelled into its southern provinces, and, by buying a burial-place for his family, laid the foundation for the subsequent conquest of the country by the Hebrews, under Joshua, 1450 B.C. They divided it into twelve confederate states, according to their tribes. Saul united it into one kingdom, and David extended it, by his conquests, to the east and south. Phœnicia, the northern part of the western coast, where the conquered Canaanites maintained themselves, remained entirely independent of the Hebrews. The two kingdoms, Israel (to the north) and Judah (to the south,) into which Palestine was divided, 975 B.C., comprehended together the country between 34° and 39° of longitude, and 31° and 34° of latitude. By the fall of these kingdoms (754 and 730 B.C.), Palestine became a Persian satrapy, and the political and religious division between the Hebrew colonies, when returning from captivity to Palestine, under Cyrus and Darius I., was the origin of that separation which continued to the time of Christ. The country on this side the Jordan (the principal river, which flows south from Lebanon, through the lake of Genesareth, to the Dead sea) was called *Judæa*, in a wider sense, and contained these provinces: Judæa, or the largest southern province, including Jerusalem, Bethlehem and Jericho on mount Judah, the ports of Cesarea and Joppa (now Jaffa,) on the coast of the Mediterranean, and a part of Idumæa; Samaria, or the smallest interior province, with the city of Samaria (afterwards *Sebaste*,) and Sichem now (from the Greek name *Neapolis*,) Nablus, and mount Ephraim, or Israel, upon which lies mount Gerizim; and Galilee, the most northern and fertile province, bounded on the south by mount Carmel and mount Tabor (which joins the other mountain,) on the confines of Samaria, on the west by Phœnicia, and on the north by Lebanon, and containing the towns of Tiberias (which, after the destruction of Jerusalem, was celebrated as the seat of Jewish learning,) Capernaum and Bethsaida on the lake of Genesareth, Nain, Nazareth, and Cana. To the country beyond the Jordan belonged the provinces of Peræa, the largest and most southerly, with mount Gilead, Gaulonitis, east of the lake of Genesareth, Batanea, and Trachonitis, the smallest in the north.

The different monuments at Jerusalem (see *Jerusalem*) give us the epochs of the history of Palestine. The Christian kingdom of Jerusalem, founded in 1099, by the crusaders, gave a new impulse to the prosperity of the Holy Land; it included the provinces on this side the Jordan, together with Phœnicia and Philistæa, and extended beyond the Jordan to the deserts of Arabia. Its constitution was European; a patriarchate, four archbishoprics, richly endowed monasteries, and ecclesiastical establishments, three orders of knighthood, several earldoms and baronies, were instituted; tribunals were formed for the nobles and the third estate; an army of from 12,000 to 20,000 men was kept on foot; and the mosque built by the caliph Omar in 637, upon the site of the temple of Solomon, was changed into a magnificent cathedral. The increasing population, with moderate taxes, a fruitful soil, and a favourable situation for commerce, appear to have secured to this kingdom prosperity and a long continuance. The kings, Godfrey of Bouillon (who died in 1100,) Baldwin, Anjou, and Lusignan, ruled with mildness, and fought with various success against the Saracens, whom the internal divisions of the reigning family, and the delay of succour from Europe, enabled to reconquer the kingdom. Saladin took Jerusalem in 1187, again made the cathedral a mosque, and the gold of the Syrian Christians alone preserved the church of the holy sepulchre. After a hundred years of oppression, the Christian rulers were at last, in 1291, entirely driven from Palestine by the Mamelukes. Since then, Palestine, laid waste by bands of Arabian robbers, has smarted under the rod of the Mohammedans, and now belongs to the pachalic of Damascus, in the Turkish province of Soristan.

Jerusalem, which has been sacked sixteen times, offers now but the shadow of its former greatness. The policy of the Turks, who raise a heavy contribution from the few pilgrims from Christian lands, who still visit this holy place, has not suffered the total decay of the monuments of the history of Jesus, which were designated during the Christian reigns in the twelfth century. Chateaubriand, in his Journal of a Journey from Paris to Jerusalem, declares that he saw, in the strongly fortified monastery at Bethlehem, a church divided among Roman catholic, Greek, and Armenian monks, with a subterraneous chapel; that it encloses the place where Jesus was born, his manger, and the grave of the innocents, and is adorned with beautiful pictures. In the neighbourhood of Jerusalem, the valley of Jehoshaphat, which extends between mount Moria and the mount of Olives, and is divided by the brook Kedron, is used as a burial-place by the inhabitants of Jerusalem. The garden of the mount of Olives, containing Gethsemane, the chapel of the sepulchre of the holy virgin, and the grotto of the bitter cup, has now a small mosque at the place of the ascension. Sion is a hill of a barren appearance and yellow colour; the house of Caiaphas (now an Armenian church,) the house of the preparation of the holy supper, and of the outpouring of the Holy Spirit (now a mosque with a Turkish hospital,) and the palace of David, are to be seen in ruins; to the southward, in the valley of Hinnom (Tophet,) is the field of blood and the burial-place of the kings; in the interior of the city is the *via dolorosa* (painful road,) through which Jesus walked to the cross; it is 500 paces in length, from the house of Pilate (now in ruins,) to the church of the holy sepulchre. This church, whose walls, according to the history of the crucifixion, enclose all the places remarkable for the burial and resurrection of Jesus, is 126 paces in length, and 70 in breadth. It is in the form of a cross, with three domes, and is built on uneven ground. Clergymen of eight nations and different Christian sects, possess it by turns, and perform in it public worship according to their respective forms:—Catholics (who are monks of St Francis, from the monastery of St Salvator in Jerusalem,) Greeks, Abyssinians, Copts, Armenians, Nestorians, and Jacobites, Georgians, and Maronites. The priests, who perform the service, and the monks of the different sects, commonly remain two months in the church, until their place is taken by others. Two hundred lamps burn day and night in the wide rooms of the building. Its walls, in which are seen the funeral monuments of Godfrey and Baldwin I., appear to have been standing since the time of Constantine the Great; the architecture of the interior is the work of the crusaders. This church was injured by fire, October 12, 1808. The chapel of the holy sepulchre remained uninjured, and the cupola, covered with lead, which fell at the time of the fire, has been replaced. Mr J. W. Ingraham, published at Boston (1828) Assheton's Map of Palestine, improved, with a geographical index.

PALESTRINA, Giovanni Pietro Aloisio, or Perluigi da, the most celebrated master of the old Roman school of music, was born at Palestrina, the ancient Preneste, whence his surname, *Il Prenestino.* He studied music under a master of the Gallo-Belgic school, whom some call *Gaudimel.* His genius soon raised him to the first rank of musical composers, and effected a great reform in church music. Towards the middle of the sixteenth century, music was at so low an ebb, that pope Marcellus II. had already formed the plan of banishing it from the churches, when Palestrina, who had conceived juster notions of the true character of church music, obtained permission to execute one of his own compositions before him. He accordingly performed the mass for six voices, still known as the *Missa Papæ Marcelli*, the elevation and simple beauty of which led the pope to abandon his design. From that time music became an essential part of the service of the Catholic church. Marcellus and his successor, Paul IV., employed Palestrina to compose a number of similar pieces for their chapel. In 1562, he was made chapel-master of Santa Maria Maggiore, and, in 1571, of St Peter. To this period we owe his greatest productions. His style (called *alla Palestrina*) prevailed over the Flemish school, which was then in high repute throughout Europe. He died in 1594, and was buried with great pomp at the foot of the altar of St Simon and Juda, in St Peter's. His monument bears the inscription *Johannes Petrus Alcysius Palestrina, Musicæ Princeps.* Some of his pieces are still performed, particularly his *Fratres ego enim accepi*, with the *Stabat Mater* and the *Impropria*, in the Sistine chapel at Rome.

PALEY, William, a celebrated divine and philosopher, was the son of a clergyman, who held a small living, near Peterborough, and was born in 1743. He was instructed under his father, who became master of a grammar school in Yorkshire, whence he was removed as a sizar to Christ-church college, Cambridge. He soon obtained a scholarship, and, in 1763, having highly distinguished himself as a disputant on questions of natural and moral philosophy, took his first degree. He was afterwards employed for three years as an assistant to an academy at Greenwich, and, in 1766, was elected a fellow of his college, and appointed one of its tutors. The lectures which he then delivered on the Greek Testament and on moral philosophy, contain the outlines of the works by which he subsequently obtained celebrity. In 1767, he took priest's orders, and maintained an intimate acquaintance with the most eminent persons in the university, who falling below the established standard of orthodoxy, Mr Paley began to be regarded with coolness by his zealous defenders. His friends could not, however, persuade him to sign the petition for relief in the subscription to the Articles, on which occasion he observed, that "he could not afford to keep a conscience." In 1776, he quitted the university, and was inducted into the vicarage of Dalston, in Cumberland, to which was soon after added the living of Appleby, and a prebendal stall in the cathedral of Carlisle. In 1782, he was appointed archdeacon of the diocese, and, not long afterwards, succeeded doctor Burn in the chancellorship, for all which preferments he was indebted to the bishop of Carlisle. In 1785, he published his Elements of Moral and Political Philosophy—a work of much simplicity and pertinence of illustration, but exceptionable in many of its definitions and principles, both in politics and morals. In 1787, Paley published his *Horæ Paulinæ*, the chief object of which is, to bring together, from the Acts of the Apostles, and the epistles, such passages as furnish examples of undesigned coincidence, and thus prove the authenticity of the scriptural writings. In 1794, he published his View of the Evidence of Christianity, in three parts, which contains a popular view of the arguments for the truth of the Christian religion, drawn up with his usual perspicuity and dialectic skill. He was soon after made a sub-dean of Lincoln, and received several valuable livings. In 1795, he was created D.D. by the university of Cambridge; and, his health not allowing him to officiate in the pulpit, he undertook the compilation of his natural Theology, or Evidences of the Existence and Attributes of the Deity, collected from the Appearances of Nature (8vo, 1802). He died in 1805. Doctor Paley was fond of amusement and company, and displayed much wit and humour. No man was more beloved by his friends, or evinced more attachment to them in return. Since his death, a volume of his sermons has been published in 8vo.

PALI. See *Indian Languages*.

PALIMPSESTS, re-written manuscripts (*codices rescripti*, from πάλιν and ψάω), have, in modern times, by the successful exertions of signor Maio (see *Codex* and *Maio*) to discover the contents of the original writings, greatly attracted the attention of philologists, and we may hope that the great collections of manuscripts at Rome, Naples, Oxford, Cambridge, &c., which have been little examined, will yet afford us many remains of ancient literature which have escaped the general wreck. On account of the dearness of writing materials in the time of the ancients, it was very natural that they should seek means for rendering serviceable, a second time, the parchment or Egyptian papyrus which had been already used. A preparation for effacing the original writing was known even in the time of Augustus. The writing upon parchment could be scratched out, and a peculiar kind of knife (*rasorium*) belonged to the apparatus of a transcriber. The parchment scratched in this manner, was rubbed with pumice stone to render it more fit for writing. Fortunately the original characters have often remained legible, so as to be visible to the naked eye, or to appear very plain with the assistance of chemical agents. As the transcribers in the middle ages, when the want of writing materials was felt, in consequence of the great demand for missals, &c., often divided the large sheets of written parchment, the second set of lines is sometimes found diagonal to the first, so that the old and new cross each other, or the old lines have remained above the others, as in the fragments of Ulphilas, the Phæton, &c. The increasing zeal in the search for remains of classic literature has directed the attention of learned men to these hidden treasures. Maio's discovery of Fronto, and the subsequent discovery of the fragments of the Phaeton of Euripides, and Cicero's books *De Republica*, Niebuhr's discovery of Gaius, together with the results of the labours of Peyron and others, have increased the interest of learned men in these investigations. See *Manuscripts*.

PALINDROMON; a verse or line which reads the same either forwards or backwards; e. g. that which is put in the mouth of Satan—*Signa te, signa, temere me tangis et angis* (cross thyself, cross thyself, you touch and torment me in vain); or, *Anna tenet mappam madidam, mulum tenet Odo.*

PALINGENESY; Greek for *regeneration*. The word is used to designate the transitions from one state into another, observed with insects, and in each of which the insect appears in a totally different form.

PALINODY; a recantation, particularly a poetical one, of any thing dishonourable or false uttered against another person. Thus the ancient poet Stesichorus wrote a *palinody* of his poetical invective against Helena, for which he had been punished by blindness, and declared all the charges contained therein untrue.

PALINURUS; pilot of Æneas in his voyage to Italy, and son of Jasius. According to the celebrated poem of Virgil, the god of sleep, under the form of Phorbas, sealed his eyes in slumber, and threw him into the sea, at the very moment when the ship was reaching the desired shore. Æneas saw his lost companion, when the shades of the lower world passed before his eyes, and Palinurus related to him how he had been saved from the water, but slain by the Lucanians, on the southern coast of Italy. The Lucanians, being afterwards tormented by a pestilence, raised a monument to his honour, to pacify his manes, and consecrated a grove to him. Mount Palinurus was named after him.

PALISADES; stakes, eight or nine feet long, and six or seven inches square, and sharpened at the end, which are set in the ground either perpendicularly or obliquely, for the greater security of a fortification, particularly for the closing up of an open passage to the works, or the protection of any exposed point, previous to an attack.

PALISOT DE BEAUVAIS, AMBROISE MARIE FRANCOIS JOSEPH; an eminent naturalist, born at Arras, in the French Netherlands, in 1752. He studied at the college of Harcourt, at Paris, and, in 1772, was admitted a counsellor of the parliament of that city. Some time after, he succeeded his elder brother as receiver-general of territorial imposts, which office was suppressed in 1777. He then devoted his attention entirely to natural history, and especially botany, and, in 1781, became a corresponding member of the Parisian academy of sciences, to which he addressed several memoirs on botany and vegetable physiology. The love of science induced him to undertake a voyage to the coast of Guinea, with an intention to travel across the African continent to Egypt; but he was unable to execute that design, and, after remaining some time at Owara and Benin, he sailed for St Domingo, and arrived at cape Français, in June, 1788. He continued there some years, occupying official situations in the colony; but his opposition to the revolutionary attempts of the negroes having endangered his safety, he with difficulty effected his escape to Philadelphia, in the United States of America. Thence he proposed to return to France, when he learned that he had been proscribed as an emigrant. He was obliged to support himself as a teacher of languages, and by exercising his talents as a musician.

till the arrival of the French minister Adet, who was himself a man of science, and who afforded Palisot the means of prosecuting inquiries into the natural history of America. He was employed to arrange Peale's collection, and made scientific tours to the Appalachian mountains and the country beyond. At length, he received the news of his name being erased from the list of emigrants, and returned to his native country, taking with him the rich collection of natural curiosities which he had formed. In 1806, he was admitted into the institute in the room of Adanson; and he became a member of other learned societies. He died January 21, 1820. Among his principal works are *Flore d'Oware et de Bênin* (Paris, 1804—21, 2 vols., folio); *Insectes recueillis en Afrique et en Amérique* (1805—21, folio); *Essai d'une nouvelle Agrostographie, ou Nouveaux Genres des Graminées* (1812, 4to and 8vo); all which are illustrated by engravings.

PALLA; a long garment of the Roman women, which hung down to the feet, and was worn over the other dress. When long enough, they threw part of it over the left shoulder, and held it fast under the arm. At funerals it was black. Tragic actors also wore the *palla*.

PALLADIO, Andrea; one of the greatest classical architects of modern Italy, whose works of art and writings alike contributed to improve the taste of the age in which he lived, and direct the genius of posterity. He was born at Vicenza, in the Venetian territory, in 1518, and, after having studied under Trissino, he went to Rome, where he acquired a maturity of skill and science from an examination of the productions of ancient and modern art which that capital afforded. Returning to his native country, he established his fame by his designs for many noble edifices both there and in other parts of Italy, which have afforded models for some beautiful structures in England, as well as other parts of Europe. Palladio belongs to the masters who, in the sixteenth century, by the study of the works of Roman architecture, created a new era in architecture. Among many splendid works executed from his designs and under his direction, the theatre *degli Olimpiei*, in his native place, is the most brilliant proof of his talents. Venice also owes to him many of her finest buildings. The villa built by lord Burlington at Cheswick (but since enlarged by James Wyatt) was from a design of Palladio, as was also a bridge at Wilton, the seat of the earl of Pembroke, in Wiltshire. The majestic simplicity of antiquity was always present to his mind, and Algarotti called him the Raphael of architects. But this great architect is best known in the present age on account of his published works, especially his Treatise on Architecture, in four books, which first appeared in a folio volume, at Venice, in 1570, and has been many times reprinted. The best edition is that of Vicenza, 1776—83, 4 vols. It has also been translated into French and English. James Leoni, an Italian architect, published Palladio's Architecture in English, with the notes and remarks of Inigo Jones, and engravings by Picart (London, 1742, 2 vols., folio); and some of the designs of this architect were published by lord Burlington in 1730. Palladio was likewise the author of an Italian work on the antiquities of Rome (Venice, 1594, and Rome, 1599, 8vo), and of Illustrations of the Commentaries of Cæsar. He died at Vicenza, in 1580. Chapuy and Amed. Beugnot have published Palladio's *Œuvres Complètes*, with plates and notes, at Paris 1827 seq., in 20 numbers, folio. See Remanza's *Lives of Venetian Architects and Sculptors*.

PALLADIUM; a wooden image of Minerva (*Pallas*), which is said to have fallen from heaven, and to have been found by Ilus, who placed it in a temple in his new city (Ilium). It was believed by the Trojans, that their city would be invincible so long as it contained the Palladium. Ulysses and Diomedes, to remove this impediment to the capture of the city, are said to have carried it off. The Romans, however, pretended that it was brought to Italy by Æneas, and preserved in the temple of Vesta, at Rome. It was considered so holy, that even the *pontifex maximus* did not dare to look upon it. Other cities, however, claimed to have possession of it. The term *palladium* has figuratively acquired the sense of *bulwark, protection, sanctuary.*

PALLADIUM; the name of a metal discovered by doctor Wollaston, associated with platina ore, among whose grains it exists alloyed with iridium and osmium, in grains still more minute than those of the platina. The process of separating it from the substances with which it occurs, is too long to be detailed here, and must be sought in the larger chemical treatises. When pure, it is of a grayish white colour, and is scarcely distinguishable from platina. It is ductile and very malleable; in hardness, superior to wrought iron, and possessed of a specific gravity of 11·8. It is a less perfect conductor of caloric than most metals, and less expansible, though in this it exceeds platina. On exposure to a strong heat, its surface undergoes a tarnish, and becomes blue. Its melting point is higher that that of gold; but if touched, while hot, with a small piece of sulphur, it runs like zinc. The sulphuret thus formed is whiter than the metal itself, and extremely brittle. Nitric acid soon acquires a fine red colour from palladium, but the quantity which it dissolves is small. Sulphuric and muriatic acid act in a similar manner. Nitro-muriatic acid, however, dissolves it rapidly, and assumes a deep red colour. Alkalies and earths throw down a precipitate from its solutions, generally of a fine orange colour. Alkalies act on palladium even in the metallic state; the contact of air, however, promotes their action. A neutralized solution of palladium is precipitated of a dark orange or brown, by a recent muriate of tin; but if it be in such proportions as to remain transparent, it is changed to a beautiful emerald-green. Green sulphate of iron precipitates palladium in a metallic state. Sulphureted hydrogen produces a dark-brown precipitate; prussiate of potash, an olive-coloured one; and prussiate of mercury, a yellowish-white. As the last does not precipitate platina, it is a good test of palladium. This precipitate is from a neutral solution in nitric acid, and detonates at about 500° Fahr., in a manner similar to gunpowder. All the metals, except gold, silver, and platina, precipitate it in the metallic state.

PALLAS, Peter Simon, imperial Russian counsellor, celebrated for his travels, particularly in that empire, and for his numerous observations and discoveries made there, born at Berlin, 1741, was the son of a physician, and chose the study of medicine, with the purpose of devoting himself only to the natural sciences, particularly to natural history. For this object, Holland then offered the largest collections and the best instructers. He therefore went to Leyden, and published there, in 1760, his dissertations on the Entozoa. He afforded important aid to Volkmann, who was arranging the splendid collection of natural curiosities in the Hague, belonging to the stadtholder, and became so skilful in the art of arranging and describing collections of natural history, that, after he had visited Britain, he was employed in superintending the arrangement of cabinets in this department, and was thus enabled to publish his *Elenchus Zoophytorum* (still a classical work on zoophytes) and his *Miscellanea Zoologica* (1760). He then returned to Berlin, and began to publish his *Spicilegia Zoologica,* which reached its fourteenth number. The empress Catharine was at that time seeking for a naturalist to explore her immense empire. In 1768, Pallas was invited to Petersburg as academician, and performed his first journey through several provinces of Russia, the Journal of which was published at the expense of the empress (Petersburg, 1771—76, 4to.). In 1777, he became a member of the committee for the measurement and topography of the Russian empire. In the mean time, botany had become his favourite study, and he made several excursions into various provinces of the empire to examine their plants. The magnificent *Flora Rossica*, begun at Petersburg in the early part of 1785, but afterwards dropped, was the first fruit of these botanical tours. No part, indeed, of the history of nature or man was untouched by him, as is manifest from his Historical Collections; his New Essays on the North; his excellent *Icones Insectorum*, and his Contributions to the Glossary of all the Languages and Dialects of the Russian Empire. In 1785, he was made a member of the imperial academy of sciences at Petersburg, and knight of the order of Wladimir, and, in 1787, historiographer to the admiralty college. As it was his desire to reside in Taurida, the empress gave him several estates in the most fertile portion of the south of the peninsula, and, after 1796, Pallas lived at Sympheropol with a large income. One of the fruits of his last journey, which he undertook with Geisler, of Leipsic, at his own expense, was the work entitled Remarks on a Journey through the Southern Governments of Russia (Leipsic, 1799 and 1801, 2 vols., 4to). The second part of this book is devoted exclusively to the Crimea, which was thus first completely laid open to us. Besides fourteen numbers of the *Species Astragalorum*, which may be regarded as a monument of that journey, we will mention, on account of its interesting views, his *Observations sur la Formation des Montagnes et les Changemens arrivés au Globe, particulièrement à l'Egard de l'Empire Russe.* The residence of Pallas in Taurida was disturbed by the lawlessness of the natives. Soon after the death of his wife, he made great sacrifices to visit an elder brother at Berlin, where he died, Sept. 8, 1811. A part of his valuable collections he bequeathed to the university of Berlin.

PALLAS. See *Minerva* and *Planets*.

PALLET; among painters, a little oval tablet, or piece of wood or ivory, very thin and smooth, on and round which the painters place the several colours they have occasion for, to be ready for the pencil. The middle serves to mix the colours on and to make the tints required in the work. It has no handle, but instead thereof a hole at one end to put the thumb through to hold it.

PALLIUM, or PALL; the woollen mantle which the Roman emperors were accustomed, from the fourth century, to send to the patriarchs and primates of the empire, and which was worn as a mark of ecclesiastical dignity. The annexed cut represents one in the costume of a pallium. In the fifth century, the patriarchs, with the consent of the emperors, began to send the pall to the archbishops, on their entrance into their dignity, and they were obliged to wear it while discharging the higher functions of their office. It became customary, however, to regard the giving of the pallium to archbishops as a sign that their election was confirmed by the patriarchs; and the council of Constantinople, in 872, decreed that all archbishops should be confirmed by their patriarchs, either by the imposition of hands, or by the sending of the pall. The popes possessed themselves of the right of confirmation in the West, and, at first, required of the archbishop, who was invested with the pall, only a written promise of canonical obedience to the papal see; but, from the tenth century, exacted a considerable tax on investiture. Notwithstanding the great increase of this tax, the pallium was, until lately, regarded as an indispensable mark of confirmation by the pope, and was sent to every archbishop, and to some of the principal bishops, when entering upon their office. Since the twelfth century, it has consisted of a white woollen band or fillet, three or four fingers broad, which is thrown over the shoulders outside of the sacerdotal vestments; one band hanging over the back, and another, somewhat longer, over the breast, and both are ornamented with a red chaplet. This ornament, as simple as it is costly (a sum from three to four thousand pounds was sometimes paid for it), is made by the nuns in the convent of St Agnes in Rome, from the wool of consecrated sheep, and is buried with its wearer.

PALL MALL. See *Mall*.

PALM, John Philip, a citizen and bookseller of Nuremberg, whom we mention because his fate contributed not a little to increase the hatred of the Germans against the French, and to sharpen their weapons against Napoleon at a later period. Palm was born in 1766. In the year 1806, his establishment sent to various other bookselling houses a pamphlet, entitled Germany in her deepest Humiliation, on the whole a superficial work, but containing bitter attacks on Napoleon and his troops in Bavaria. Palm asserted, to the last moment of his life, that he had no knowledge of the work, which was sent to him to be forwarded, as is customary in Germany. The police of Napoleon, which was spread all over Germany, learned the fact that Palm had forwarded it. He requested a judicial investigation from the authorities at Nuremberg, but it was refused. Being afterwards at Munich, he received information from his wife that he was prosecuted. Though he might have fled, he returned to Nuremberg. He now, however, found it necessary to conceal himself. A beggar boy appeared at his house, and requested to see him in order to get alms. Palm gave him something, and immediately French *gens d'armes* entered and seized him. Soon after, he was carried to general Bernadotte, in Anspach, where a trial was again refused, because, as the aid-de-camp of the marshal said, his arrest was the consequence of a direct order from Paris. He was sent to Brunau. Berthier declared that nothing could be done for him, though the most respectable people interfered for him. The process was hurried, no counsel allowed to Palm, though the sentence states the contrary, and the whole trial was carried on by an interpreter. The unhappy man was condemned to death, because he could not say who had sent the parcel containing the pamphlet, in which, however, no call for insurrection or assassination was to be found. He expected the news of his liberation, when his door was opened, August 26; but it was to announce to him the order for his execution. St Hilaire declared that none could pardon but the emperor himself, if he were present; he, it was said, had ordered the immediate execution of the sentence. Officers of high rank, however, have declared, that not Napoleon, but Berthier, is chargeable with this outrage. It had been proved that Palm had not sold one copy of the pamphlet. Palm was not the only German shot after hasty military trials ordered by the French marshals.

PALM; an ancient long measure, taken from the extent of the hand. The Roman palm was of two kinds. The *great palm*, taken from the length of the hand, answered to our *span*, and contained twelve digits or fingers' breadths, or nine Roman inches, equal to about eight and a half English inches. The *small palm*, from the breadth of the hand, contained four digits or fingers, equal to about three English inches. The Greek *palm*, or *doron*, was also of two kinds: the *small* contained four fingers, equal to little more than three inches: the *great palm* contained five fingers. The Greek *double palm*, called *dichas*, was large also in proportion. The modern *palm* is different in different places where it is used. It contains, at Rome, eight inches three and a half lines; at Naples, according to Riccioli, eight inches: according to others, eight inches seven lines; at Genoa, nine inches nine lines; at Morocco and Fez, seven inches two lines; in Languedoc, and some other parts of France, nine inches nine lines: the English palm is three inches.

PALM, the tree. See *Palms*.

PALMA, GIACOMO, surnamed *Vecchio* (the old), a pupil of Titian, and one of the most famous painters of the sixteenth century, was born at Bergamo, in 1518, and died between 1564 and 1574, at Venice, which possesses excellent pictures by him (e. g. the St Barbara).

PALMA. See *Canaries*.

PALMA. See *Majorca*.

PALMA CHRISTI; a name frequently applied to the castor oil plant.

PALMETTO. In the Southern States of America, this name is frequently given to the cabbage-tree, a species of palm, growing along the Atlantic coast from about lat. 35° to the extremity of Florida. It attains the height of forty or fifty feet, and is by far the tallest, as well as the most northern, of our palms. The summit of the stem is crowned with a tuft of large palmated leaves, varying in length and breadth from one to five feet, and supported on long foot-stalks, which give it a beautiful and majestic appearance. Before these leaves are developed, they are folded like a fan; at their base and in the centre of the stem are three or four ounces of a white, compact, and tender substance, which is eaten with oil and vinegar, and somewhat resembles the cabbage in taste, but is neither highly nutritious nor peculiarly agreeable, and, moreover, is attended with the destruction of a vegetable which has perhaps been a century in growing. The flowers are small, greenish, disposed in long clusters, and are succeeded by a black inesculent fruit, about as large as a pea. The cabbage-palm in the United States appears to be confined to the immediate vicinity of the sea. Michaux, however, mentions two stocks observed by him in Florida, at the distance of forty or fifty miles in the interior. The same author met with it in Bermuda, and supposed it to be found in the Bahamas and along the shore of the gulf of Mexico; but it is unknown in Louisiana, and is not found beyond the limits of the United States. The wood, though extremely porous, in the Southern States is preferred to every other for the construction of wharves, on account of its being secure from the attacks of sea-worms; and has been found peculiarly suitable for the construction of forts, as it closes, without splitting, on the passage of a ball. The slowness of its growth will always discourage its propagation.

PALMS; a natural family of plants, the pride of tropical climates, and which, more than any other, contributes to give a peculiar and imposing character to the vegetation of those regions. Their lofty, straight, and unbranching trunks, crowned at the summit by a tuft of large radiating leaves, gives them an aspect entirely unique, and far surpassing that of other trees in majesty. Aside from the grandeur of their appearance, many of them hardly yield to any other vegetables in useful properties. The species are numerous, but are not well understood; and many fruits exist in collections which cannot be referred to known genera. They belong to the monocotyledonous division of plants, and have their parts arranged in threes, or one of the multiples of that number. The calyx has six divisions, more or less profound; the stamens are six in number; and the fruit consists of a berry or drupe, composed of a substance sometimes hard and scaly, but more often fleshy or fibrous, surrounding three, or, usually, a single, one-seeded nut. The stem is simple, or very rarely branching, and is sustained by a mass of fibrous roots at the base. Though usually attaining the stature of a tree, and sometimes ascending to a very great height, in some species, the stem rises only a few inches above the surface of the ground. This stem is cylindrical, but, internally, the fibres are arranged in fascicles, and not in concentric circles, as with trees generally. The centre is soft, while the circumference is firm and hard like horn. In these respects, the palms are analogous to other monocotyledonous vegetables. This stem is covered externally with the sheaths of the fallen leaves, or with their cicatrices, and is terminated by a tuft of pinnate or flabelliform leaves. From the midst of these arises a simple or branching spadix, on which the numerous small flowers are disposed, and which at first is enveloped in one or several spathæ, or sheaths.—Many of the palms appear to be confined within narrow limits, and it has been remarked that, whenever a district is characterized by striking peculiarities of soil or climate, it appears to be inhabited by peculiar species. All the palms are not strictly confined within the tropics, but a few inhabit the warm regions on their borders. Among the more useful of the palms may be mentioned the cocoa-nut, the sago, and the date.

PALMS, ORDER OF. See *Fruit bearing Society*.

PALM SUNDAY; the last Sunday before Easter, on which Christ's entry into Jerusalem, when palms were strewed before him, is celebrated. Formerly, a wooden ass, with the figure of Christ on it, was drawn on rollers in procession, because Christ entered Jerusalem on an ass. It is still celebrated with much solemnity by the Catholics, and branches are strewed in the churches.

PALMYRA; a Syrian city, famous in ancient times, capital of Palmyrene, which for a short time formed a powerful state. It was at an early period called *Tadmor* (the city of palms), of which the Latin name is a translation. The origin of this city is of remote antiquity. It was important as the bulwark of Judæa against the wandering tribes from the Euphrates; and, as the emporium of the commerce of Eastern and Western Asia, it was a large and opulent city in the time of Trajan, who subjected the whole province to the Roman power. It was situated in a valley with a southern exposure, in the midst of a beautiful palm grove in the desert. It was adorned with magnificent palaces, whose ruins, though it has been twice destroyed, still excite admiration. It was sacked for the first time under the reign of the celebrated Zenobia, by the emperor Aurelian, in 275, and a second time by the Saracens, in 744. In the middle of the eighteenth century, the ruins were discovered by Wood and Dawkins, and described in the magnificent work of Wood, the Ruins of Palmyra. Among the ruins are a great number of beautiful columns, ruins of temples and towers, all admirably wrought of marble. Many Greek and Palmyrene inscriptions, and one in Latin, increase their value. The most beautiful monument is a temple of the sun, which is also in the best preservation. Palmyra, under its old name (Tadmor), is now a village in the desert of Syria, and some poor families have built their huts amidst its magnificent ruins.—See St Martin's *Histoire de Palmyre* (Paris, 1823).

PALOMINO DE VALASCO, Aciscle Antonio, one of the most distinguished painters of Spain, was born at Bajalance, near Cordova, in 1653. He studied in the latter place, but, as his inclination led him to cultivate the arts, he placed himself under the painter Valdes. In 1678, he went to Madrid, where, in the reign of Philip IV., many distinguished artists resided. Palomino was presented to the king by the celebrated Coello, and was employed by the former to execute the frescoes in the gallery del Cierzo in the Prado. This commission he executed with so much success, that he was appointed court-painter, with a considerable pension. In Valencia, Salamanca, Granada, and Cordova, to which he was successively invited, he executed numerous works which were highly esteemed. His son assisted him in some of his productions. It has been objected to Palomino that his figures, even in his most elevated compositions, partake too much of the character of common life; but his colouring and perspective are admirable. He died at Madrid in 1726. He is the author of a history of Spanish painters, *El Museo pictorico, y Escala optica* (3 vols., Madrid), of which the third volume, containing an account of the most distinguished Spanish artists, has been translated into French (Paris, 1742). Quilliet, in his *Dictionnaire des Peintres Espagnols* (Paris, 1816), borrows much from Palomino.

PALOS; a small town of Andalusia, in Spain, where Columbus fitted out his ships, and whence he sailed, on his first voyage for the discovery of the new world, in 1492. Here, also, is the convent, at the gate of which Columbus appeared as a poor stranger, and asked bread and water for his child. It is now almost deserted, being occupied by a few hundred inhabitants. It lies on the Tinto; lon. 6° 58′ W.; lat. 37° 10′ N. See Irving's interesting account of his pilgrimage to Palos, in company with a descendant of the Pinzon family, in the appendix to his *Voyages of the Companions of Columbus*.

PALSY, PARALYSIS; a nervous disease, known by the loss or diminution of the power of voluntary motion, and sometimes of sensation, in one or several parts of the body. (See *Nervous Diseases*.) It appears under different forms; sometimes it attacks the whole system; at others, it affects one side of the body (*hemiplegia*), and at others a single member. The causes of palsy are numerous, but their mode of action is not clearly ascertained. The action of cold on the body in a heated state, a violent physical or moral excitement, or the suppression of an ordinary evacuation, sometimes produces it. The introduction of metallic substances, particularly lead or copper, into the system, often brings on incurable palsy. The paralysis of the vital organs is attended with immediate death; and, when the head is attacked, the memory and judgment are often impaired.

PALUS MÆOTIS. See *Azoph*.

PAMLICO, called also TAR RIVER, in North Carolina, passes by Tarborough, Greenville, and Washington, and runs south-east into Pamlico sound; lat. 35° 22′ N. It is navigable, for vessels drawing nine feet of water, to Washington, forty miles, and for boats carrying thirty or forty hogsheads of tobacco to Tarborough, ninety miles.

PAMLICO SOUND; a large bay on the coast of North Carolina, eighty-six miles long and from ten to twenty broad. It is separated from the sea by a sandy beach, hardly a mile wide, which is covered with bushes. It communicates with Albemarle sound. Ocracoke is its principal outlet.

PAMPAS; vast plains in the southern part of Buenos Ayres, extending from the de la Plata nearly to the Andes, 750 miles in length by 450 in breadth. A part is covered with grass, affording excellent pasturage; and another portion, at the foot of the Andes, forms an immense forest, which, however, is easily passable in all directions. Herds of horses and cattle, in a wild state, feed in these wide plains. Several beasts of prey infest them, and the bisacho, a small animal, burrows like the rabbit. The inhabitants are the Gauchos, who are of Spanish origin, but who lead a life of wild independence, living on horseback, eating nothing but jerked beef, and drinking nothing but water, hospitable and generous to the traveller, and professing the Catholic religion; and, to the south, fierce tribes of mounted Indians, who lead much the same kind of life as the Gauchos, with whom they are perpetually at war. Armed with his *lasso*, or leather strap, the Gaucho, or pampas Indian, rides on horseback, and, with great dexterity, throws it round the neck of a wild horse, bull, or other animal which he wishes to take, by a sudden jerk, throws the animal to the ground, and gallops off with his booty. There is a route across the pampas from Buenos Ayres to Chile, on which is a chain of cabins, called *posts*, seven or eight leagues distant from each other. The journey is performed on horseback, or in a wheeled carriage; but it is difficult, and rendered dangerous by robbers and the Indians.

The *pamperos* are violent winds from the west or south-west, which sweep over the pampas, and often do much injury on the coasts. Head's amusing Journey across the Pampas (London, 1826) gives a very spirited and picturesque account of his gallop through this immense wilderness of grass and water.

Pampas del Sacramento are vast plains, similar to those above described (about 60,000 square miles), in the northern part of Peru. They abound in vegetable productions, but are infested with troublesome or dangerous insects and reptiles. They are inhabited by different native tribes. See *Llano*.

PAMPHLET. There are several derivations of this word, most of which are much strained. The most probable is that which considers it as coming from the phrase *par un filet* (on a thread), whence the word is written, anciently, and by Caxton, *paunflet*, properly denoting a book sold unbound, and only stitched, as the French *brochure*. The German *Flugschrift* (fugitive publications) is more significant. Pamphlets are not of recent origin; they were early used under the name of *libelli*, in religious controversies. They are generally intended for immediate effect. Political pamphlets may be considered as the shells used in party warfare, while newspapers more resemble the common weapons. They generally bear the imprint of the excited spirit of the time. When their object is scientific or religious, they exhibit that sort of information on these subjects which it was thought expedient to present immediately to the public. They are of great interest to the historian, but like newspapers, he must use them with great caution. It is highly important that public libraries should collect and preserve such publications; otherwise they are generally lost. Myles Davies has written an *Icon Libellorum*, or a critical history of pamphlets. See also, D'Israeli's *Curiosities of Literature*.

PAMPLONA, or PAMPELUNA (anciently *Pompelo*, or *Pompeiopolis*); a city of Spain, and capital of Navarre, situated on the Arga, in a plain near the Pyrenees, founded by Pompey; 78 miles north-west of Saragossa, 172 north-east of Madrid; lon. 1° 41′ W.; lat. 42° 50′ N.; population, 14,054. The town is strongly fortified, surrounded by walls, and has two castles, a cathedral, thirteen monasteries, four hospitals, and a college. It is situated in a fertile and well cultivated country, but has few manufactures. It was taken by general Lauriston (q. v.) in 1823.

PAN; an Arcadian rural divinity, son of Hermes and a nymph, or of Penelope. He is represented as old, with a crooked nose, two horns, pointed ears, a goat's beard, goat's tail, and goat's feet with a pipe (see *Syrinx*), and carrying a crooked shepherd's staff. He was first worshipped at Athens, after the battle of Marathon, in which it was pretended that he had assisted the Athenians. This shepherd god was afterwards made the all-supporting god of nature, and personified the universe (*το παν*; compare Servius on Virgil, eclogue ii. 31). He was also introduced into the earlier fables, as in that of the battle of the Titans. He distinguished himself in musical contests, and by playing on the pipe, which he invented, and with which he contended for the prize with Apollo. (See *Syrinx*.) Some appear to have honoured him also as the inventor of the flute of reeds. Pan is the protector of the herds at pasture, of wild beasts, of fishes, and takes care of the bees of the husbandman, on which account, milk and honey were offered to him. Evander is said to have introduced his worship into Italy. He was here considered as corresponding to Faunus, and several festivals were celebrated in his honour, as the Lupercalia, in honour of Pan Lupercus, the protector against wolves. From Pan comes the expression *panic fear*. According to Plutarch, it was the Pans and Satyrs dwelling at Chemnos who first announced the death of Osiris, and thereby caused so much terror that, since then, every sudden, groundless fear has been called *panic*. According to Polyænus, Pan saved the army of Bacchus from great danger by a wild scream, a thousand times repeated by the echoes of the woods and rocks. In the battle of the Titans, Pan terrified the enemy by blowing in a sea conch. The ancients believed that great armies were often struck during the night with a sudden terror, caused by some god or demon to punish presumption.

PANACEA; a daughter of Esculapius; the goddess of healing. She is an allegorical creation of poets and artists. Her name (Πανακεια) signifies the "all-healing;" hence *panacea*, a universal remedy.

PANAGIA; the Greek name for the picture of the Holy Virgin, of which the Greek Catholics have one in every house, on board of vessels, &c., before which candles are kept burning.

PANAMA; a city of Colombia, capital of the department of the Isthmus (New Grenada), on the bay of the same name; lat. 8° 58′ N.; lon. 79° 27′ W.; population, 20,000. It contains a college, numerous churches and monasteries, a cathedral, an hospital, &c. The roadstead is exposed to violent north winds, and the bay is so shallow that ships are obliged to remain several miles below the town, and discharge by flat-bottomed boats. The commerce, however, is considerable, principally with the British of Jamaica, and the North Americans. The pearl fishery furnishes a yearly export to the value of above £9,000. The commerce of Panama was very flourishing while the Spanish intercourse with South America was carried on in the galleons; but it has since declined. The climate is unhealthy, and the heat excessive. See *Congress*.

PANAMA, Congress of. See *Congress*.

PANAMA, Isthmus of. The result of a series of levelings, carried across the isthmus in 1829, by Messrs Lloyd and Falmark, in the employ of the Colombian government, enables us to correct some statements in the article *Darien*. From the account of Mr Lloyd, communicated to the royal society in 1830, it appears that, in the narrowest part of the isthmus, there is a break of several miles in the great chain of the Andes, particularly between Chagres and Chame, where there are extensive plains, not more than 300—500 feet in height. After 935 pair of levelings from Panama to La Bruja, near the mouth of the Chagres, it was found that high water mark in the Pacific is 13.55 feet higher than in the Atlantic, but that, at half-tide, the level of the Pacific is the same with that of the Atlantic; and, at low tide, is several feet lower. These circumstances induced the Colombian government to conceive the plan of a canal from Panama to Puerto Velo, on the Atlantic side, which has a large and secure harbour, and is distant forty-three miles north-north-west from Panama. A railroad between the two cities is already in progress.

PANARD, Charles Francis; a French poet, born about 1690, at Courville, near Chartres, where he had a trifling employment, and lived some time in obscurity, until the comedian Le Grand, having seen some of his pieces, encouraged him to write for the stage, in which department he became very successful. Marmontel calls him the "La Fontaine of the Vaudeville," both from the *naïveté* of his writing and the simplicity of his character. His works are occasionally incorrect and negligent; but they are always stamped with nature, sentiment, wit, and good sense. He knew perfectly well how to sharpen the point of an epigram; but his satire was always directed to the vice, not to the person. He died in 1755. His works were printed in four volumes, 12mo, entitled *Théâtre et Œuvres diverses*.

PANATHENÆA; a festival celebrated at Athens, in honour of its tutelary deity, Minerva. Ericthonius, who instituted it (according to some, Orpheus was the founder), called it *Athenæa*; but, when Theseus united the inhabitants of twelve districts into a city, the festival received the name *panathenæa* (from *παν*, universal), because it was thenceforth solemnized by all the tribes of Athens. The *panathenæa* were distinguished into the greater and the less, in both of which three kinds of games were exhibited, conducted by ten presidents (*athlothetæ*). On the first day were races with torches in the Ceramicus; on the second, gymnical exercises, and imitations of naval fights; on the third contests of music and declamation, and dramatic representations. An olive crown from the groves of Academus, and a vessel full of the finest oil, were the rewards of the victor. Then followed the sacrifices, and the sacrificial feast. The greater *panathenæa* were distinguished from the less not only by their greater splendour and longer continuance, but particularly by the solemn procession, in which the *peplus*, a sacred garment, consecrated by young virgins, and made of white wool, and adorned with gold embroidery, representing the battle of the giants, was carried from the Acropolis into the temple of the goddess, whose ivory statue was covered with it. The *peplus* was also used in the *panathenæa* as the sail of a ship, which was moved through the streets by secret machinery, and accompanied by a solemn procession. This festival was so holy, that criminals were released from the prisons on the occasion of its celebration, and gold crowns were conferred on men of distinguished merit.

PANCKOUCKE, Andrew Joseph; a bookseller at Lisle, in Flanders, where he died in 1753, aged fifty-two. He was the author of several popular and useful compilations, and some original works.

PANCKOUCKE, Charles Joseph, son of the preceding, was also a bookseller, and a man of letters. He was born at Lisle in 1736, and, at the age of twenty-eight, settled at Paris, previously to which period, he had made himself known by some publications from the press, and mathematical pieces, which he had sent to the academy of sciences. His house became the resort of the most distinguished authors; and he conducted himself with great liberality to those with whom he was connected in his literary enterprises. He engaged in the publication of the *Mercure de France*, and various other periodical works, and established the *Moniteur*, under the direction of H. B. Maret, since duke of Bassano. He also formed the plan of the *Encyclopédie Méthodique*, consisting of a number of distinct dictionaries of the various branches of art, science, and literature, of which ninety parts had been published in 1822. Panckoucke died December 19, 1798. He was the author of *De l'Homme et de la Reproduction des differents Individus* (1761, 12mo); *Traduction Libre de Lucrèce* (1768, 2 vols., 12mo); and other works.

PANCRAS; one of the many villages which have, in course of time, become part of London; one mile and a half north of London Proper. In its well-known burial-place for Catholics, lie Paoli, the chevalier D'Eon (q. v.), Cavallo, Woollet, &c.

PANCRATIUM; one of the contests of the ancient Greeks, in which all four kinds of fighting were used (see *Gymnasium*); also a contest in which no means of obtaining the victory were left untried, where the antagonists both wrestled and fought with the fist; also a fight for life and death.

PANDÆMONIUM; a general temple for the gods and demigods of antiquity; an assembly of demons.

PANDECTS (from παν, every thing, and δεχεσθαι, to include); a part of the *corpus juris civilis*. It consists of a collection, systematically arranged, from the works of Roman lawyers on jurisprudence, to which the emperor Justinian (by whose command the collection was made) gave the force of law, A. D. 533, at the same time declaring all the writings of the jurists, and collections of the law, which had previously been authorities, of no force. They were also called *digesta* (from *digerere*, to arrange), because they were a collection of the scattered contents of many works. See *Civil Law*.

PANDEMOS; a Grecian surname of Venus. According to some authors, Theseus introduced the worship of Venus Pandemos at Athens, when he first collected into one whole the different tribes (δημοι) of Attica. According to others, this surname arose from the circumstance that the temple of Venus was situated in the market, the place of assembly of the whole people (παντος δημου); according to others, still, because Solon built this temple with the money which the public girls were obliged to pay. But Venus was worshipped under this name in other places at an early period. The image of Venus Pandemos at Elis, riding upon a he-goat, by the side of that of Venus Urania, is worthy of notice. Venus Pandemos here appears in opposition to celestial love, as a symbol of prostitution.

PANDIT, in Hindoostan; a learned Brahmin; one versed in the Sanscrit language, and in the sciences, laws, and religion of the country.

PANDOORS; the name formerly given to the Servian or Raitzian foot-soldiers, coming from the mountains in the neighbourhood of the village Pandur, in the county of Sol, in Lower Hungary. They were at first irregular troops. In 1750, they were made regular troops. They were formerly dreaded for their savage mode of warfare.

PANDORA (from παν, every, δωρον, gift); the first woman; so called because she received gifts from all the Olympians. Prometheus, driven from Olympus by Jupiter, had formed man, and animated him with fire stolen from heaven. The indignant father of the gods determined to punish the offence. He commanded Vulcan to form a woman of clay, equal to the goddesses in beauty and grace, and to give her life and the power of speech. The god executed the command. According to other accounts, she was the creature of Prometheus, and the gods came down to see her, and conferred their gifts on her. Minerva instructed her in all works of female skill. Venus endowed her with beauty and fascination. Mercury inspired her with a desire of pleasing, and taught insinuating words. Minerva carried her thus equipped into the assembly of the gods, and all admired the work. Jupiter, who presented to her a box or a chest, in which were contained all human woes, then sent Mercury to Epimetheus, the brother of Prometheus, with the fatal present. Prometheus had warned him not to receive any of Jupiter's gifts; but the charms of the virgin overcame his caution. Till that time, man had lived free from evil, from oppressive labour, and from disease. But Pandora brought with her the whole host of calamities, which rushed out, and spread over the whole world. When Epimetheus, or, as some say, Pandora, had, out of curiosity, raised the cover of the box, which a divine command had forbidden them to open, Hope alone remained at the bottom of the box, which was suddenly closed by the rash opener; and she alone enables man to endure his miseries and hardships.

PANEGYRIC; a eulogy, either written or spoken, the object of which is to give a favourable representation of some person or thing. Historical truth is so far rendered subordinate, that the author exaggerates the excellence of the subject, to inspire others with his own admiration. In the Grecian republics, this department of oratory was much cultivated, and the panegyric of Isocrates (q. v.), notwithstanding its artificial elaborateness, is a masterpiece of finished writing. In Roman literature, the best which we possess is the panegyric of Pliny the younger on Trajan, both in classical style and in rhetorical arrangement. The later Roman panegyrists of the third and fourth century, are valuable only to the historian who is seeking for facts. Among the moderns, the French have something similar in their *éloges*.

PANEL; a schedule or roll of such jurors as the sheriff returns to pass upon any trial; and *impanelling* a jury, is returning their names in such schedule of parchment. In Scottish law, the prisoner at the bar is the *panel*.

PANEL, in joinery, is a tympanum or square piece of thin wood, sometimes carved, framed, or grooved in a larger piece between two upright pieces and two cross pieces.

PANIN NIKITA IVANOVITCH, Count; a Russian minister of state, born in 1718. His family was originally from Lucca, in Italy; his father was general-lieutenant in the reign of Peter I. The young Panin served, at first in the guards of the empress Elizabeth, became chamberlain in 1747, was minister plenipotentiary to Copenhagen, and, two years afterwards, to Stockholm. On his return, he was made governor of the grand-prince Paul Petrovitch, and, when Catharine II. ascended the throne, in 1762, was appointed minister of state. The war against the Turks, to which the troubles in Poland gave rise; the exchange of the duchy of Holstein for the counties of Oldenburg and Delmenhorst (see *Olden-*

burg), to the advantage of the younger line of Holstein-Gottorp; the peace with the Porte in 1774; the mediation of Russia at the peace of Teschen; and, finally, the armed neutrality,—were effected principally through his representations. All the instructions of the military commanders and foreign ministers, and the whole correspondence with foreign courts were drawn up by him. He was the main support of the Prussian system in the Russian cabinet; but his influence over Catharine had much diminished towards the close of his ministry, while that of his adversaries had increased. (See *Catharine II.*) The principles on which he conducted public affairs were, that a state must always maintain its own dignity, without the interference of others; and that it is unbecoming a powerful state to have recourse to dissimulation and artifice, but that the most entire frankness should characterize all the measures of the ministry. His firmness was not to be shaken by threats or promises. He always advised what he thought was for the best, and, in such a case, he opposed even his own mistress. He died in 1783.

PANNONIA, in ancient history; the country inhabited by the Pannonians, a Thracian tribe, and situated between the Illyrians and Celts, on the northern side of the Eastern Alps. The emperor Augustus first succeeded in conquering the Illyrians and Dalmatians; he penetrated into the mountains of the Pannonians, and subdued them (A. D. 10). A dangerous conspiracy of this people against the Romans was suppressed by Tiberius. They appear to have afterwards settled, with the consent of the Romans, on the Danube. It was probably under the emperor Claudius that their country was first organized into a Roman province. Pannonia comprehends the eastern part of Austria and Stiria, all that part of Hungary (still called Pannonia) on the south of the Danube, a part of Carniola and Croatia, all Sclavonia, and a part of Bosnia, along the Save. It was probably Adrian who divided it into Pannonia *superior* or *occidentalis* (afterwards *prima*) and Pannonia *interior*, or *orientalis* (afterwards *secunda*). After the Marcomannic war, Pannonia was repeatedly ravaged by barbarians. It suffered still more at the time of the great migration of the nations. In the fourth century, the Vandals conquered a part of the country, and afterwards the Goths. It was entirely conquered by the Huns under Attila. After the death of this conqueror, in 453, the kingdom of the Huns sunk back within its eastern limits on the Pontus. The Sarmatians, from whom are descended the Sclavonians of the present day, next settled on the mountains of Pannonia. Pannonia was also occupied, with the consent of the emperor of the East, by the Gepidæ and Ostrogoths. When the latter migrated to Italy, the Lombards entered Pannonia, and subdued the Gepidæ, but, removing to Italy in 568, left the country to the Avars (see *Avars*), who were conquered by Charlemagne, and forced to embrace Christianity. Pannonia was finally conquered by the Hungarians, about the year 900. See *Hungary*.

PANORAMA (from παν, all, the whole, and ὁραμα, view); a perspective view of a town or natural scene, projected on the plane of the horizon, invented by Robert Barker, an Englishman, in 1787. The panorama may be considered as the triumph of perspective. The artist, from a high point, must take an accurate plan of the whole surrounding country, as far as the eye can reach. Truth of representation and closeness of imitation are the great objects to be aimed at in panoramas, and the delusion must be promoted by the manner in which the picture is put up and lighted. It is circularly disposed round the walls of a rotunda, so that the spectator who is stationed in the centre, and prevented from approaching too near the painting, by a railing, finds himself, as it were, on the spot from which the view was taken. The light is admitted from above, without dazzling the spectator, from whom the aperture by which it enters is also concealed; and, as he sees no end to the picture, in which all the parts are delineated in their true proportion to the whole, and with the natural colouring, the illusion is complete. Robert Fulton introduced the panorama into France, and panoramic views of a great number of cities and natural scenes have been exhibited, within the last thirty years, in Europe and America. The *stereorama* (from στερεος, solid), or *panstereorama*, is a miniature representation, in relief, of towns and other objects, constructed of cork, pasteboard, or other light and flexible substances. The *diorama* was invented in France, and differs from the panorama chiefly in being flat instead of circular, and therefore presenting only a particular view, like any other picture, in front of you, and not all around. The manner in which the light is introduced is essentially the same as in the case of the panorama.

PANTALONE; a mask of the Italian comedy. (See *Mask.*) From him the *pantaloons* have their name, because he is dressed in wide, long garments of this sort.

PANTALOONS. See *Pantalone*.

PANTHEISM (from το παν, the body of all existing things, and Θεος, God). When man begins to think of the cause of things, he either separates the great original cause entirely from other existences (which is *monotheism* (q. v.), if he believe in one simple cause; or *polytheism*, if he believe in several, or, at least, in a multiplied emanation of causes from the great original cause), or he believes the great cause to be within the universe, that is, he considers the universe itself to be God, which is *pantheism*. This belief is generally the offspring of materialism (q. v.) consistently carried out. Some persons, however, have also applied the word *pantheism* to that doctrine of theology according to which God's Spirit not only pervades every thing, but every thing lives through him and in him, and there is nothing without him (*Acts of the Apostles*, xvii. 27 et seq.; *Ephes.* iv. 6). The character of this doctrine depends upon what is understood by *God*, and in what relation we consider existing things to stand to him, which must essentially determine our moral and religious notions. The chief modern supporters of pantheism, as first defined, are generally considered to be Bruno and Spinoza; hence *Spinozism* is often, yet wrongly, used for *pantheism*. Most of the systems of the Greek philosophers have this basis. The religions of heathen antiquity are pantheistic in so far as they take for granted a *fate*, or a forming power of nature, which determines every thing.

PANTHEON (from the Greek παν, every, and θειον, deity) signified, in antiquity, a temple sacred to all the principal deities in common. The most famous is the pantheon at Rome, which Agrippa, the favourite of Augustus, built on the *campus Martius*. Pope Boniface IV. consecrated it, in 607, to the Virgin Mary and all the martyrs; hence it is still called *St Maria ad martyres*. It is still more commonly called the *rotunda*, on account of its form. It is one of the finest edifices in Rome. Its stone roof is vaulted, and through a large hole in the centre of the roof the interior is lighted. The well-preserved portico seems to be of a later period than the temple itself; it consists of sixteen columns of Oriental granite, each of which is fifteen feet in circumference. The interior was formerly adorned with the most beautiful statues of the various deities, of which the best were carried, by Constantine, to Constantinople. At present, there are in the eight niches, eight fine columns, placed there by the emperor Adrian. The height of the temple is equal to the width, i. e. 137 feet. The diameter of the opening in the cupola is twenty-seven feet. The floor is paved with porphyry. It has suffered much from the emperors, the barbarians, and the popes. A smaller pantheon, at Rome, is, according to Montfaucon, considered to be the pantheon of the *Minerva Medica.* Ruins of a magnificent pantheon, which Adrian caused to be built at Athens, are still extant. It was supported by 120 columns. The pantheon in Paris was begun in 1764; it is in the form of a cross, 339 feet long and 253 feet broad, uniting, in its style, the Greek and Gothic. It was consecrated to St Genevieve, but, in the beginning of the revolution, was called *pantheon,* and appropriated to the reception of the ashes of great men. It then received the inscription *Aux Grands Hommes La Patrie Reconnaissante.* The Bourbons removed this inscription, and placed the following: *D. O. M. Sub Invoc. S. Genovefæ. Lud. XV. Dicavit, Lud. XVIII. Restituit.* After the revolution of July, 1830, the people, in an immense mass, restored the noble and simple French inscription. The vaults under the church are skilfully arranged for the reception of the remains; they are neither damp, dark, nor gloomy. The tombs of Voltaire and Rousseau had been taken from their original situation, and placed in an obscure vault. The relics of Benjamin Constant were lately deposited there. The busts of Foy and Manuel have been lately placed in the pantheon.

PANTHER (*felis pardus*). There is much discrepancy of opinion among naturalists as to the distinctive characters of the panther and leopard, most zoologists having assumed that the former had six or seven rows of black spots in the form of roses, that is, formed by the assemblage of five or six simple spots, on each flank, whilst the latter had ten rows of still smaller spots. Mr Bowdich, however, states that some skins procured in Africa proved that this distinction was erroneous. Mr Temminck considers the leopard of Cuvier as a variety of the panther of the same author, and classes them both as leopards; and Buffon confounds the jaguar with the panther. The panther of Temminck is the *F. chalybeata,* found in Eastern Asia. It is observed by Cuvier, that this cannot be the panther of the ancients, as they procured the vast numbers exhibited at Rome from Africa. Pliny states, that Scaurus exhibited at one time one hundred and fifty; Pompey the Great, four hundred and ten; Augustus, four hundred and twenty. The panther is still found in Africa, from Barbary to the most remote parts of Guinea. It is to Africa, says Mr Pennant, what the tiger is to Asia, with this difference, that it prefers the flesh of brutes to that of human beings. It is almost untamable, always retaining its fierce, malevolent aspect, and perpetual muttering growl. The female is pregnant about nine weeks, and the young are born blind, continuing so for about nine days. The animal known under the name of panther, or more generally *painter,* in the United States of America, is the cougar or puma. See *Puma.*

PANTOMIME; the art of expressing action and emotion by gestures, in the largest sense of the word. Every lively conversation is accompanied by gestures, though very different both in nature and amount in different nations. The calm utterance of a speech in the British parliament, accompanied only by a simple motion in emphatic passages, would not suit an Italian, who delights in seeing a monk passing up and down the street whilst he preaches, with the crucifix in one hand, and a handkerchief in the other, to wipe off the moisture with which his excitement covers his cheeks; nor would even Talma's gesticulation suit all countries; yet the art of expressive gesture deserves to be ranked among the fine arts. The Greeks cultivated it much; but with them and the Romans, it took, like all their other fine arts, a plastic character, and the expression of individuality, was as much as possible suppressed; hence, also, their masks. The mimic art with the ancients was connected with declamation and music on the one hand, and with the dance on the other. Of the mimic dances Xenophon gives us a lively picture, in his Banquet and his Anabasis, vi. 1., § 3, 8. They were mostly representations of mythological subjects, or were of a warlike character. The Romans had actors very distinguished for impressive gesticulation, of whom Roscius is the most celebrated. His instructions were eagerly sought for by orators. In modern times, the art is sadly neglected. We do not suppose, indeed, that the delivery of the ancient actors could be advantageously imitated by our parliamentary debaters or pulpit orators, yet we can hardly doubt that they would awaken vastly more interest by a more careful study of the art of gesticulation. Among many works on this subject, Gilb. Austin's *Chironomia* is distinguished. In pantomime, the performer relies solely upon gestures. If an action is represented by a mimic dance, we have the ballet (q. v.): the ballet, therefore, is always pantomimic, but the pantomime does not necessarily require the dance. The Greeks had arrived at the separation of gesture from declamation, on which the pantomime is founded; thus we find that one person represented a character by gestures and artificial motions, guided by music (which, together, the Greeks called *ορχησις,* the Romans, *saltatio*), whilst another performed the declamation. Moreover, single situations, particularly comic scenes, were sometimes pantomimically performed among them (e. g. at banquets), but the true pantomime they had not. The word *pantomime* was invented in Italy; it meant, originally, an artist who imitates only by gestures. At a later period, entire theatrical representations, consisting of gestures only, were called *saltatio pantomimorum.* This species of performance was particularly developed under the first Roman emperors. Bathyllus (q. v.) and Pylades (the two great rivals in this art), Hylas and others, were celebrated in the times of Augustus, and not unfrequently gave occasion to riots, as the people took the greatest interest in these performances. But the pantomimes became so wanton, that many ancient authors consider this exhibition, in which the Romans took a passionate interest, among the causes of the decline of Roman greatness. The ancient pantomimes probably ceased with the decay of the Roman theatre. In the Italian mask a vestige of it remained. The pantomime, in the strictest sense that is, unaccompanied with dancing, is an invention of modern times. More frequently, however, it has been united with the dance, and chiefly cultivated by the Italians and French. Noverre (q. v.), who must be considered as the father of the modern French dance, made a pantomime of Voltaire's Semiramis. With some Oriental nations, particularly with the Persians and Chinese, pantomimes accompanied by music form one of the chief amusements.

PANZER, **George Wolfgang**, a distinguished German bibliographer, born in 1729, at Sulzbach, was for some time a country clergyman, at Etzelwang, and afterwards at Nuremberg. His chief works are a History of the German Translation of the Bible by Luther (1783); Annals of the Early German Literature (Nuremberg, 1783); an addition to it (Leipsic, 1802, Nuremberg, 1805, 4to); and his *Annals Typographici* (Nuremberg, 1792, to 1803, 11 vols., 4to), in which he enumerates all works known to have been printed from the invention of the art of printing to the year 1536. The works in all languages are chronologically arranged, the place of printing given, also a short account of them, and the libraries and publications in which they are contained. Panzer died July 9, 1805, leaving a very valuable library.

PAO; Chinese for *fortress*, the same as *Tchai*, *Ouei*, &c., all of which appear in geographical names.

PAOLI, Pascal, a Corsican officer, distinguished by his exertions to maintain the independence of his native country, was born in Corsica, in 1726, and was the second son of Hyacinthus Paoli, a man of considerable influence in the island. The circumstances of the country inducing him to remove, with his family, to Naples, Pascal was there educated at the Jesuits' college. He was still engaged in the prosecution of his studies, when his countrymen, who had long been struggling for freedom against the Genoese, by whom they were held in subjection, sent him an invitation to become their chief. He accepted the proposal, and, going to Corsica, was appointed to the supreme government of the island in July, 1755. Having organized a regular plan for the conduct of affairs, both civil and military, Paoli opposed the Genoese with such spirit and success, that, after they had carried on hostilities against him for nearly ten years, they entered into a treaty with France, in pursuance of which a body of French troops was sent to their assistance; and, finding themselves still unable to conquer the island, they at length made a surrender of their claims of sovereignty over it to the French government. The duke de Choiseul endeavoured to prevail on Paoli to submit to the new arrangement, and accept of the office of commander-in-chief, under the authority of France. But he rejected all overtures of accommodation, and opposed with vigour the dangerous enemies he had now to encounter. At first he was successful, and a much greater force than had been anticipated was found requisite for the subjugation of Corsica. Fresh bodies of troops were sent thither, and, overpowered by numbers, Paoli found it necessary to consult his personal safety by flight from his native country. He made his way to the sea coast, and, embarking on board an English vessel, went to England, where he obtained from the government a pension of £1200 a year. In 1789, the island was recognised by a decree of the national assembly, as a department of France; and Paoli, being invited to resume his station at the head of affairs, resigned his pension, and took his departure from England. April 23, 1790, attended by deputies from Corsica, he presented himself at the bar of the national assembly at Paris, where he was received with enthusiasm, and took the oath of fidelity to the French government. The progress of the revolution disappointed the hopes which he had conceived; but he continued the connexion with France till after the execution of Louis XVI., when he abandoned his allegiance, and was invested with his original dignities of president of the *consulta*, or national council, and commander-in-chief of the island. He was encouraged to adopt these measures by the promise of assistance from Great Britain; and in February, 1794, a British army landed in Corsica. On the 14th of June following, a meeting took place of deputies from the different parts of the island, when, through the influence of Paoli, a decree was made, declaring the separation of Corsica from France, and its union to the British empire. Paoli subsequently returned to England, in consequence of some difference with the viceroy, Sir G. Eliot. Having had the misfortune to lose the bulk of his property through a commercial failure at Leghorn, he was reduced to difficulties on his return to London; but, his pension being restored, he was relieved from his embarrassment, and passed the remainder of his days in tranquillity. He died in London, February 5, 1807. See Boswell's *Account of Corsica*.

PAOLO, Fra. See *Paul of Venice*.

PAOLO GIOVIO. See *Jovius*.

PAPACY. See *Pope*.

PAPAS. The ancient Greek πάππας (papa, father), at present the name given to every clergyman in the Greek Catholic church, is the original of *papa*, *pape*, *papst*, *pope*, &c. Zealous as cardinal Baronius is for the glory of the Roman see, he allows that in the East, as well as in the West, the title *papas* (or pope) belonged to all bishops in the first centuries; and the title was even bestowed on venerable clerks. In the times of Cyprian, St Ambrosius, Jerome, Augustine, every bishop had the title of *pope*, as their writings show. At the seventh œcumenical council, in 869, at Constantinople, only the four patriarchs of the Greek church were called *popes*, and the bishop of Rome determined to appropriate the title to himself; but it required the iron hand of Gregory VII. to carry the plan into effect. He assembled some Italian bishops at Rome, in 1073, who formed an assembly called a *council*, which excommunicated the emperor Henry, and declared that no one had the right to the title of *pope* except the bishop of Rome.

PAPAW. The plant so named, in the United States of America, is a shrub, or rarely a small tree, inhabiting all parts of the country south of the fortieth parallel of latitude, and even some degrees farther north, on the western side of the Alleghanies. It is rare, however, in the lower parts of the Southern States, and is most abundant in the basin of the Ohio, where it sometimes forms thickets occupying exclusively several acres. Its presence is indicative of extreme fertility in the soil; and, in a favourable situation, it sometimes attains the height of thirty feet, with a diameter, at base, of six or eight inches. The papaw has received from botanists the name of *asimina triloba*, and belongs to the *anonaceæ*, a family of plants almost exclusively tropical. The leaves are five or six inches long, elongated, and wedge-shaped; the flowers are large, pendent, and dark purplish brown; the fruit is about three inches long, thick, fleshy, and contains several large triangular stones; when ripe, it is of a yellowish colour, and the pulp is soft and edible, but it is insipid to the taste, and is not much esteemed. The wood is extremely soft, spongy, and is applied to no use in the arts. The cellular integument of the bark, especially of the roots, exhales a nauseous odour. Three other species of *asimina* inhabit the more southern parts of the United States, and a fourth is found in Mexico. These, together with the common papaw, constitute a genus exclusively North American. The true papaw (*carica papaya*) is a widely different plant, and a native of the East Indies. It has very much of the habit of a palm, and attains the height of about twenty feet, having a thick, simple stem, herbaceous in its consistence, and naked till within about two feet of the top, and marked with the cicatrices of the fallen leaves, throughout the greater part of its length. The leaves have long footstalks, are very large, deeply divided into seven, nine, or eleven lobes, which are sinuate and incised. The male flowers are pure white, agreeably scented, and are disposed in loose clusters upon long peduncles; the female flowers are very numerous, large, and bell-shaped, composed of six yellow petals, and are supported on short simple peduncles. The fruit is oval, furrowed, about as large as a small melon, full of a sweetish pulp, and contains oblong, wrinkled, and brown or blackish seeds. It is eaten both in a crude state and prepared in various manners, and has an aromatic, sweetish, and tolerably agreeable flavour;

but, when cultivated in our greenhouses, the fruit is entirely worthless. This plant is remarkable for the rapidity of its growth, rising to the height of six feet in about six months; it flowers and bears fruit throughout the year. Four other species of *carica* inhabit the intertropical parts of America, and, according to Bartram, one is found in East Florida, but it has not been seen there by later travellers.

PAPER, History of. The most ancient kind of paper, the Egyptian, was made of the *cyperus papyrus*. (See *Papyrus*.) According to the information handed down to us, the skins or fibres were separated in thin layers from the blade of the grass, and spread upon a table moistened with water from the Nile. The same adhesive water was heated, and the layers were wet with it. Upon the first layer another was placed, pressed and dried in the sun, and smoothed with a tooth. The age of this all-important invention is uncertain. In later times, the Romans devoted great industry to the preparation of paper; they had their *glutinatores* (those who glued the paper), *malleatores* (hammerers), &c. According to Pliny, the sheets of the Romans were generally thirteen inches wide. There are, however, distinguished antiquarians, and among them the famous chevalier Landolina (died 1810, in Sicily), who maintain that it was the pith of the plant which the ancients chiefly used for the purpose of making paper; and he supports his opinion by ingenious experiments made with a plant growing near Syracuse, and which corresponds to the description given by the ancients of the papyrus. The Egyptian paper was called *βιβλος*, *papyrus*, *charta Ægyptiaca* or *Niliaca*. The greatest quantity of paper was made in Alexandria, which greatly increased its wealth by its commerce in this article. In the fifth century, this paper was rendered very dear by heavy taxes. In the eighth century, it began to be supplanted by cotton paper; yet it was used in Italy until the eleventh century. The natives of Mexico, before the Spanish conquest, prepared their paper from the leaves of the agave (q. v.), in a manner resembling the ancient mode of preparing papyrus. They removed all the fleshy substance from the leaves, by putting the plant in water, laid the remaining fibrous textures one on the other, and besmeared them with a clayey substance, which gave to the whole much firmness and elasticity. Besides the papyrus, there are remnants of ancient paper made of the inner bark of trees, which, however, does not seem so general, on account of its brittleness. The papyrus seems to be better fitted for resisting the tooth of time than any other writing material. To give a single instance: Mr Saillier, at Marseilles, who possesses a number of Egyptian papyrus manuscripts, has two rolls, which Champollion the younger, when embarking for Egypt in 1829, discovered to contain the history of the wars and reign of Sesostris the Great; their date is that of the ninth year of his reign. But Sesostris-Rhamses, or the Great, according to the calculations of German chronologists, lived in the time of Moses; being, it is supposed, the son of the Pharaoh who perished in the Red sea. Whatever may be thought of the date assigned to these manuscripts, it is certain that their age is very great. In the eleventh and twelfth centuries, much was written on *membranes*. The Arabians became acquainted, in 704, A. D., with the cotton paper in Bucharia, prepared it themselves of raw cotton, and transplanted the art to Spain in the eleventh century. In that country, where water-mills were in use, the first paper-mills also were set up, and at a later period carried over (about the year 1300) to Italy, France, and Germany. In these mills the manufacture of paper from cotton rags was commenced. This cotton paper was known under the name of *charta serica*, *cottonea*, *gossypina*, *xylina*, *damascena*, also *Parcamena Græca*. It differs from the linen paper by its less compact texture, and by more easily breaking and blotting. Most of the American printing paper is made of cotton, on account of the great use of cotton fabrics compared with linen in that country; and for this reason it is mostly soft and liable to be torn. But, to judge from the appearance of some remnants of Spanish paper of the twelfth century, attempts were made as early as that time to add linen rags to the cotton ones, which probably led, at a later period, to the invention of linen paper. Proper linen paper hardly makes its appearance before 1318; but from that year the archives of the hospital in Kaufbeurn, in Germany, contain documents upon linen paper; and in the city archives of the same place are documents of 1324, 1326, 1331, upon the same kind of paper: hence it is probable that the first linen paper was made in Germany. Spain and Italy have no linen paper before the year 1367, in their archives or libraries. This paper was not derived from China, as the Chinese to this day manufacture their paper of raw hemp and the rind of bamboos and mulberry-trees. Linen paper is esteemed the best, on account of its firmness and durability. The English at present make the finest paper; they have brought it to great perfection in respect of whiteness, firmness, and fineness, though the old paper, with a yellow tinge, was probably better for the eyes than the dazzling white paper used at present. The French also manufacture very fine paper. The Italians and Germans make the cheapest paper, as durable as that of the nations already mentioned, but not so fine. The manufacture of paper has of late rapidly increased in the United States of America. According to an estimate in 1829, the whole quantity made in this country amounted to about five to seven millions a year, and employed from ten to eleven thousand persons. Rags are not imported from Italy and Germany to the same amount as formerly, because people here save them more carefully; and the value of the rags, junk, &c., saved annually in the United States, is believed to amount to two millions of dollars. Machines for making paper of any length are much employed in the United States. The quality of American paper has also improved; but, as paper becomes much better by keeping, it is difficult to have it of the best quality in this country, the interest of capital being too high. The paper used there for printing compares very disadvantageously with that of Britain. Much wrapping paper is now made of straw, and paper for tracing through is prepared in Germany from the poplar tree. A letter of Mr Brand, formerly a civil officer in Upper Provence, in France (which contains many pine forests), dated February 12, 1830, has been published in the French papers, containing an account of his successful experiments to make coarse paper of the pine tree. The experiments of others have led to the same results. Any of our readers, interested in this subject, can find Mr Brand's letter in the *Courrier Français* of November 27, 1830, a French paper published in New York. In salt-works near Hull, Massachusetts, in which the sea-water is made to flow slowly over sheds of pine, in order to evaporate, the writer found large quantities of a white substance—the fibres of the pine wood dissolved and carried off by the brine—which seemed to require nothing but glue to convert it into paper.

Paper-Making.—The combination of flexible fibres by which paper is produced, depends on the minute subdivision of the fibres, and their subsequent cohesion. Linen and cotton rags are the common material of which paper is made; but hemp and some other substances, as straw, are used for the coarser kinds. These materials, after being washed, are subjected to the action of a revolving cylinder, the surface of which is furnished with a number of sharp teeth or cutters, all so placed as to act against other cutters fixed underneath the cylinder. The rags are kept immersed in water, and continually exposed to the action of the cutters for a number of hours, till they are minutely divided, and reduced to a thin pulp. During this process, a quantity of chloride of lime is mixed with the rags, the effect of which is to *bleach* them, by discharging the colouring matter, with which any part of them may be dyed, or otherwise impregnated. Before the discovery of this mode of bleaching, it was necessary to assort the rags, and select only those which were white, to constitute white paper. If, however, the bleaching process be carried too far, it injures the texture of the paper by corroding and weakening the fibres. In that kind of paper intended for lithographic printing, the rags should not be bleached by chlorine at all; the least quantity of chlorine will materially injure it. The pulp, composed of the fibrous particles mixed with water, is tranferred to a large vat, and is ready to be made into paper.

Paper is made either by the hand or by machinery. When it is made by the hand, the workman is provided with a *mould*, which is a square frame with a fine wire bottom, resembling a sieve, of the size of the intended sheet. He dips this mould, and lifts up a portion of the thin pulp, and holds it in a horizontal direction. The water runs out through the interstices of the wires, and leaves a coating of fibrous particles, in the form of a sheet, upon the bottom of the mould. The sheets thus formed are subjected to pressure, first between felts or woollen cloths, and afterwards alone. They are then *sized*, by dipping them in a thin solution of gelatin, or glue, obtained from the shreds or parings of animal skins. The use of the size is to increase the strength of the paper, and, by filling its interstices, to prevent the ink from spreading among the fibres by capillary attraction. In *blotting* paper, the usual sizing is omitted. The paper, after being dried, is pressed, examined, selected, and made into quires and reams. *Hot-pressed* paper is rendered glossy by pressing it between hot plates of polished metal.

Paper is also manufactured by machinery, and one of the most ingenious methods is that invented by the Messrs Fourdrinier. The general principles upon which paper-making machinery operates are not difficult of comprehension. The rags, after having been cut by the machine formerly alluded to, and soaked in water, are in a state of pulp placed in a wooden trough, called the *vat*. This vat is placed at one extremity of a long wooden frame, which has a revolving cylinder at each of its ends. Over these two cylinders, which both revolve in the same direction, there is stretched an endless web of brass wire cloth. The vat, at the one end of the frame, has an opening or slit along its whole length, which is intended to permit the pulp to flow down upon the wire web below; and in order to regulate the proper quantity of pulp, that flows down from the vat to the web, the slit in the side of the vat may be made larger or smaller by means of a regulating screw. The cylinders being in motion while the pulp is flowing from the vat upon the web, and continued sheet of pulp, will be laid upon the web, which is in continual motion forward from the vat. The web moves slowly forward, and the pulp is dispersed equally over its surface by the action of eccentrics keeping it in a tremulous motion. When the web arrives at the cylinder, at the other end of the frame, the sheet of pulp is wiped off by a large revolving cylinder, covered with felt or flannel, from which it advances through between a series of rollers, and over three polished cylinders heated by steam, the second being of a higher temperature than the first, and the third than the second. From the last steam cylinder the pulp is delivered dried, and in the state of paper on to a reel, when it is cut into sheets. Another machine for making paper consists of a horizontal revolving cylinder of wire web, which is immersed in the vat to the depth of more than half its diameter. The water penetrates into this cylinder, being strained through the wire web, at the same time depositing a coat of fibrous particles on the outside of the cylinder, which constitutes paper. The strained water flows off through the hollow axis of the cylinder, and the pulp is wound from the part of the cylinder above water, in a continued sheet. It would be totally inconsistent with the plan of this work to enter into minute detail in describing the machinery employed in paper manufacture, and numerous plans, elevations, and sections would be necessary to make the action of all the parts intelligible even to a practical mechanic. The account we have given will be understood by the general reader, and those who wish for minute details must have recourse to the accounts given of the various patents that have been taken out by the original inventors, and those who have followed them in the way of improvement.

It may be remarked that a most important part of the process must be performed on the material before it comes to the machine, in order that the paper may be of a good quality, and free from knots and other irregularities of surface. After the rags have been thoroughly cut, they are passed through a sieve in the state of pulp, which sieve is of such a fineness as to allow the pulp to pass through, while the coarser particles are retained. This process, which is equally essential to the hand and to the machine paper-making, has consequently received great attention from those who have devoted themselves to this important branch of manufacture, and several ingenious contrivances have been devised for the effective clearing of the pulp. Mr Turner contrived a most ingenious piece of apparatus for this purpose, in which he caused the pulp to pass through a sieve of a given fineness, varying with the quality of the paper to be made, and assisting the passage of the pulp through the sieve, by causing a partial vacuum to be formed below it, Mr Dickinson and Mr Ibitson have also invented ingenious and effective machines for the same purpose. By peculiar contrivances, invented and patented by Messrs Towgood and Smith, the paper is sized before it leaves the machine, and also cut into sheets by the apparatus of Fourdrinier, or that of Mr Cowper. For the purpose of making very thick drawing or copper-plate printing paper, or fine bristol boards, a process called *couching*, is followed; this consists in uniting two or more sheets, and pressing them together, in order to form one thick sheet. This is a tedious process, and adds considerably to the cost of these papers. Mr Dickinson, to whose ingenuity much is due for improvements in all the departments of the paper-making machinery, has some time since taken out a patent for making plate and drawing papers, by the union of the two continuous sheets of pulp in the machine. One web of pulp moves from each end of the machine towards the centre, where, both passing between rollers, become united, and being taken up by a web of felt are passed over the drying rollers, and delivered in one thick sheet upon the reel. Mr Cubb has lately invented a method of fabricating a beautiful species of embossed paper, coloured in the pulp, and adapted for paper hangings, or for decorating the walls of rooms; and as the patentee can unite different kinds of paper together, or paper with plain or figured silk or cotton, an endless variety of effect may be produced.

PAPER MONEY. See *Circulating Medium.*

PAPER MULBERRY. See *Mulberry.*

PAPHOS. There are two cities of this name in the island of Cyprus—old Paphos, ten stadia distant from the western coast, upon a height; and new Paphos, situated on the sea-shore. The first was famous in antiquity for the worship of Venus, thence called *Paphia* or *Cypria.* It was said that Venus here first landed, when she arose out of the sea. Here was an old image of the goddess, not made to represent the human form, but a white, twisted stone, terminating in a point; also the oldest temple in the island, which contained large treasures, and in which bloodless offerings were presented to Venus (Astarte, Aphrodite), such as incense and garlands of flowers. This image, together with an old tradition, seems to prove that the early worship of the goddess, in this place, was accommodated to the Phœnician and Syrian religious rites. New Paphos was famous as a place of commerce, and for its harbour; it suffered greatly by earthquakes, and was nearly destroyed by them during the reign of Augustus. Paul here preached the gospel to the proconsul Sergius.

PAPIER MACHE is a substance made of cuttings of white or brown paper, boiled in water, and beaten in a mortar till they are reduced into a kind of paste, and then boiled with a solution of gum Arabic, or of size, to give tenacity to the paste, which is afterwards formed into different toys, &c., by pressing it into oiled moulds. When dry, it is covered with a mixture of size and lamp-black, and varnished.

PAPILIO, OR BUTTERFLY; a large genus of insects belonging to the *lepidoptera*, now divided into a great number of sub-genera, the genus *papilio* of Linnæus forming the family of *diurnæ* of Latreille, whilst the genus is restricted to such of this family as have naked chrysalids, of an angular form, and attached by the tail; the perfect insect has six legs; the internal border of the inferior wings is concave or scalloped; in fact, it only includes the first division of the Linnæan genus, viz. the *equites.* One of the most remarkable and interesting circumstances connected with this beautiful class is their series of transformations before reaching a perfect state. The female butterfly lays a great quantity of eggs, which produce caterpillars, destructive to the foliage of almost all vegetables. After a short life, these assume a new form, and become chrysalids—the tomb of the caterpillar and the cradle of the butterfly. These chrysalids are attached in various ways, and are of various forms; some of a corneous appearance, with brilliant golden or argentine spots; others resembling a silken pod; within this covering the proscribed and often disgusting caterpillar becomes the agile and brilliant butterfly—a change which poets have made typical of immortality. The mode in which the perfect insect is packed in his narrow cell, is very curious. It is fully described in the works of Swammerdam. When the period of its confinement has elapsed, the fly escapes from his prison-house by disgorging a frothy liquor, which dissolves the glutinous matter that gives solidity to the chrysalis, and this at last yields to the efforts of the enclosed insect, when it emerges perfectly formed for flight, but unable to use its wings until the air has given them consistence. If, however, the heat of the weather is too great, instead of expanding into a firm and flat membrane, they present a folded or corrugated appearance, and are wholly useless. These insects, in their perfect form, take little food: for a short time, they void a fluid of a reddish colour, perhaps the remains of food, ingested before their last change. This discharge is probably the cause of the showers of blood spoken of by early writers, which occasioned so much alarm. A single female butterfly produces several hundred eggs, but their over increase is checked by a host of enemies. A single pair of sparrows, it is calculated, will destroy upwards of 3000 caterpillars in a week: great numbers are also killed by a species of fly, which deposits its eggs in the caterpillar, where they hatch, and the produced larvæ feed on the internal parts of their unhappy nurse. See Cramer, Reaumur, Madame Merian, &c.

PAPIN, DENYS, an eminent natural philosopher, was a native of Blois, in France. After finishing his studies, he made a visit to England, and, in 1680, was admitted a fellow of the royal society. Being a Protestant, the revocation of the edict of Nantes prevented him from returning to his native country, and, on leaving England, he settled at Marburgh, in Germany, as a teacher of mathematics. Papin chiefly distinguished himself by his researches concerning the power of steam, and the influence of mechanical pressure in retarding the ebullition of liquids. He suggested the principle which led to the invention of the steam-engine (see *Newcommen*); but he is best known for an invention of his own, denominated *Papin's digester* (see *Digester*), to soften bones, &c.

PAPINIANUS, ÆMILIUS; the greatest Roman lawyer of his time, born under Antoninus Pius, in the year 140, and a native either of Beneventum, in Italy, or of Syria. He applied himself to the study of Grecian and Roman literature, philosophy and jurisprudence, and, by his solid learning and inflexible integrity, obtained great credit and influence, was honoured with the first offices of state, and, at last, was chosen prefect of the pretorian guards. The emperor Severus, on his death-bed, recommended to his care his two sons, Caracalla and Geta. Papinian tried all means of preserving concord between them, but his remonstrances were so disagreeable to Caracalla, that he at last removed him from his place, though he still continued to treat him, outwardly, as a friend and confidant. When Caracalla had caused his brother to be assassinated, he asked Papinian to justify the deed, but received for answer, that it was easier to commit fratricide than to justify it, and that it would be a second murder to sully the memory of an innocent man. Caracalla concealed his anger; but, when the pretorian guards, probably at the instigation of the tyrant, demanded the head of Papinian, he gave him up to their fury, and caused him to be executed, in the year 212. Papinian wrote several works, and educated several distinguished scholars. His reputation as a lawyer was so high, that Valentinian III. ordered that, whenever the opinions of the judges were divided, Papinian's opinion should be followed. Everardus Otto has designated every thing of his in the pandects, and has written his life (Bremen 1743).

PAPPENHEIM, GODFREY HENRY, count of, imperial general in the thirty years' war, was born 1594, descended from an ancient and noble German family. He distinguished himself in the battle of Prague as colonel, in which he was severely wounded, and left on the field, where he was found by his own soldiers, who were stripping the slain. In 1626, he conquered, with the assistance of the Bavarians, 40,000 peasants in Upper Austria, who had taken arms to defend their faith; then traversed Northern Germany, and joined, in 1630, general Tilly, whom he even outdid in cruelty, on the taking of Magdeburg. His fiery courage distinguished him every where; but he was not qualified for a commander-in-chief. Tilly ascribed the loss of the battle of Leipsic to his impetuosity. He appeared on the field of Lutzen (q. v.), on the side of Wallenstein, was mortally wounded and exclaimed, when he heard that Gustavus had also fallen, "Let the duke of Friedland (Wallenstein) know that I am mortally wounded; but I depart with joy, as I know that the implacable enemy of my faith has fallen with me on the same day.

PAPYROGRAPHY (so called by Mr Sennefelder); the art of taking impressions from a kind of pasteboard, covered with a calcareous substance (called *lithographic paper*), in the same manner as stones are used in the process of lithography. It is an art but lately invented. See Sennefelder's *Papyrographische Sammlung*.

PAPYRUS (*cyperus papyrus* of Linnæus). This sedge-like plant has acquired celebrity from its furnishing the paper of the ancient Egyptians. The root is very large, hard, and creeping; the stem is very stout, naked, except at the base, eight or ten feet high; triangular above, and terminated by a compound, wide-spreading and beautiful umbel, which is surrounded with an involucre composed of eight large sword-sharped leaves. The inconspicuous flowers are disposed in little scaly spikelets, which are placed at the extremity of the rays of this umbel. It is an aquatic plant, and the lower part of the stem is always immersed in water. The papyrus grows in the swamps along the borders of the Nile, and not in the stream itself, as has been supposed. Bruce observed it in the Jordan, and in two places in Upper and Lower Egypt. It now grows wild in Sicily, and late travellers have discovered it in some of the western rivers of Africa, which circumstance renders it probable that it is found throughout the greater portion of the interior of that continent. The uses of the papyrus were by no means confined to the making of paper. The inhabitants of the countries where it grows, even to this day, manufacture it into sailcloth, cordage, and sometimes wearing apparel. Boats are made by weaving the stems compactly together, and covering them externally with a resinous substance, to prevent the admission of water. Although these resemble baskets in their appearance, they are of great utility, and indeed are the only kind known in Abyssinia. The roots are also employed for fuel. The most ordinary use, however, was for the manufacture of paper, by a process which has been known from the remotest antiquity, even before the historical times of Greece. (For this, see *Paper*.) In order to raise the plant in our green-houses, it is necessary to place it in a cistern of water, having rich mud at the bottom.

PAR (Latin, *equal*) is used to denote a state of equality or equal value. Bills of exchange, stocks, &c., are *at par* when they sell for their nominal value; *above par* or *below par* when they sell for more or less.

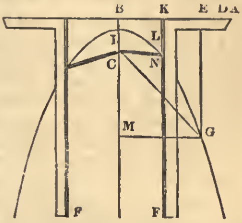
PARA; a Greek preposition of very various meaning, according to the case which it governs. In compound words, it means *above, aside, against, about, thereto*, &c., and it appears in a very large number of our compound words.

PARA; a Turkish coin, very thin and small, of copper and silver, the fortieth part of a Turkish piaster, which is constantly varying in value, sometimes fourteen of them being equal to a Spanish dollar, sometimes fifteen, &c. It is as light in weight as it is of little value, and the writer well recollects its liability to be blown away in making payments in the open air in a windy day. The Greek *phœnix* is the sixth part of a Spanish dollar.

PARABASIS; a transition, fault, extravagance; particularly a part of the ancient comedy, in which the poet himself addresses the spectators, through the leader of the chorus.

PARABLE (from the Greek, παραβολη); sometimes a mere simile, but usually a series of them, or a tale made up of similes. The parable differs from the allegory by the circumstance of being less symbolical. The original idea is not kept so completely out of sight. From the fable proper it differs by being taken from the province of reality. Fine parables are contained in the Old and New Testament; this mode of instruction, in fact, is very common with the Eastern nations; e. g. the parable which Nathan addressed to David, Christ's parable of the prodigal son, of the labourers in the vineyard, of the faithless steward. Herder and Krummacher have distinguished themselves among the German writers by their parables.

PARABOLA; a curve, formed by that section of a cone in which the axis of the section is parallel with the opposite side of the cone. The following i an easy method of drawing the parabola. Let AB be a right line, and C a point without it, and DKF a square in the same plane with the line and point, so that one side, as DK, be applied to AB, and KF coincide with the point C; on F, fix one end of the thread FNC, and the other at the point C; and let part of the thread, as FN, be brought to the side KF by a pin N; then let the square DKF, be removed from B to A, applying its side DK close to BA; and in the mean time the thread will be always applied to the side KF; and by the motion of the pin N there will be described a curve called a semi-parabola. Then bringing the square to its first position, moving from B to H B the other semi-parabola will be described.



The point, where the side of the cone is intersected by the plane, is called the *apex*. All the parallel lines which are drawn within the curve perpendicularly through the axis (which runs from the apex through the surface of the curve), are called *ordinates;* the halves into which the axis is divided, *semiordinates;* the portion of the axis from the apex to its point of intersection with a given ordinate, the *abscissa* of that ordinate; the two sides of the curve, from the apex to the base of the cone, the *legs* of the parabola. The length of the legs varies with the distance of the section from the vertex of the cone. The distance of its apex from the vertex of a given cone determines its curvature. The square of the semiordinate in the parabola is equal to the rectangle of the abscissa of the semiordinate and of the parameter, a line which is to the distance of the apex from the vertex of the cone as the square of the diameter of the base is to the square of the side of the cone. The magnitude of the parameter is always the same for any given distance of the apex from the vertex, and consequently for any given parabola; but the semiordinates and their abscissas are longer in proportion as the latter are farther from the apex. If the side of the cone and the diameter of its base, and consequently also their squares, are equal to each other, the parameter is equal to the distance of the apex from the vertex of the cone; or, in other words, this distance itself is the parameter. The point in the axis where the abscissa is equal to the parameter, is called the *focus*. It bears this name, because the theory of the parabolic concave mirror is founded upon its principal property. The theory of the parabola is not less important in the science of gunnery. Every projectile, which does not fall perpendicularly, moves in a direction resulting from the force of projection and the gravitation of the projectile, and the parabola enables us to calculate mathematically the path of a projectile in free space, from the proportionate magnitude of the two forces. Setting aside the resistance of the air, it is demonstrable that the path of the projectile must be a parabola, whose apex is its greatest height, i. e. greatest distance from the earth's centre of gravity. If the projection is horizontal, the apex is then at the point where the free path begins, and the body describes one leg of a parabola. If the direction is between the horizontal and perpendicular, the body describes one leg of a parabola in its ascent, and the other in its fall; and in both cases, therefore, the path of the body is easily determined. And, on the contrary, if the distance and position of an object are given, it is easy to determine, from the force of projection, and the weight of the projectile, the angle of direction which should be given to the latter. The resistance of the air will affect the direction of the projectile; but in small heavy bodies, the effect is trifling; and in the larger, such as bombs, it is easily determined on mathematical principles. See *Projectiles*, and *Mechanics.*

PARABOLIC MIRRORS. See *Burning Mirrors.*

PARABOLOID, in geometry, is a body generated by the rotation of a parabola around its axis.

PARACELSUS, or PHILIPPUS AUREOLUS THEOPHRASTUS BOMBASTUS DE HOHENHEIM; a celebrated empiric and alchemist, born at Einsiedeln, near Zurich, in Switzerland, in 1493. His father, a physician, is said to have been the natural son of a Teutonic knight. After some education at home, he visited France, Spain, Italy, and Germany, with a view to improvement in medicine, and the arts and sciences connected with it, especially chemistry. In the course of his travels, he became acquainted with some remedies not in common use among the faculty (probably preparations of mercury), by means of which he performed extraordinary cures, and obtained great reputation. Returning to Switzerland, he taught medicine and surgery at Basle, delivering his lectures partly in the German language, for want of a sufficient knowledge of the Latin. At length, having cured John Lichtenfels, a rich ecclesiastic, of a dangerous disease, and being precluded, by a decision of the magistracy, from obtaining the stipulated reward, for which he was obliged to sue his patient, he was so enraged at the disappointment, that he grossly abused the judges, and, becoming apprehensive of their resentment, took his departure from the city. He then led a wandering life in Alsatia, accompanied by his pupil Oporinus, who, disgusted with his violence and intemperance, at length left him to pursue his wild career alone. Paracelsus professed an utter contempt for the practice of his medical contemporaries, and boasted of an intercourse with spirits, and the possession of the philosopher's stone, and the elixir of life; but he disgraced his pretensions by dying in the forty-eighth year of his age, after a few days' illness, at the hospital of St Sebastian at Salzburg, in 1541. Among the writings attributed to Paracelsus are some on surgery, chemistry, and theology, many of which remain unpublished. A collection of his works, in eleven volumes, quarto, was printed at Basle, in 1589; also one printed at Geneva, in 1658, with a preface, containing an account of the author.

PARACHUTE; a silk instrument, of an umbrella shape, about twenty feet in diameter, attached to balloons, by means of which the aeronaut may descend slowly from a great height. Blanchard made the first successful experiment with one in London, in 1795. Garnerin has also invented a peculiar kind of parachute.

PARACLETE (παρακλητη, a counsellor, comforter); in the English translation, the Comforter; the Holy Ghost. Jesus promised to his disciples (*John* xiv. 16), that his Father would send them another Comforter, the Spirit of truth, who should abide with them for ever, and (vr. 26) teach them all things. See *Abelard.*

PARADISE (from the Greek word παραδεισος, a garden, a park, by which the garden of Eden is rendered in the Greek translation of the Old Testament from the Hebrew); the garden of Eden, in which the first parents of the human race were placed after their creation. Here they lived in a state of innocence, until they forfeited the favour of God, and were expelled from their happy seat, for an act of disobedience. Commentators are divided as to the situation of Eden.

PARADISE, Bird of (*Paradisea*, Lin.); bill straight, compressed, strong, and notchless; nostrils covered with feathers of a velvety or metallic lustre; plumage singular and splendid. They occur in Japan, China, Persia, and various parts of India, but are supposed to be originally natives of New Guinea. They were formerly supposed to live on dew, to be without legs, and never to alight. The legs were, in fact, torn off in preparing the birds for ornaments. There are several species. The *great bird of Paradise* (*P. major*, Shaw; *apoda*, Lin.) is of a cinnamon hue; crown luteous; throat golden green or yellow; side feathers very long and floating; length, from the end of the bill to the end of the real tail, about twelve inches; but to the end of the long hypochondroid feathers, nearly two feet. This species is found in the Molucca islands, and those round New Guinea, particularly Papua and Aru, where they arrive with the westerly monsoon, and return to New Guinea with the easterly. They move in flights of thirty or forty, with a leader above the rest, and preserve their light and voluminous plumage in order, by always flying against the wind. Sometimes, however, a sudden change of wind discomposes their feathers, so that they fall. Judging from their bill and claws, it is not improbable that they subsist both on animal and vegetable food.

PARAGUAY; a republic of South America, situated between the Parana on the E. and S., the Paraguay on the W., and Brazil, from which it is separated by the Xexuy and a mountainous ridge on the N.; lat. 24° to 27° 30′ S.; lon. 54° 40′ to 58° 30′ W. It comprises a superficial area of about 50,000 square miles, with a population differently estimated at 150,000, 200,000, and 300,000.

Paraguay was discovered by Sebastian Cabot (then in the service of Spain), in 1526. In 1776, it formed a province of the newly established vice-royalty of Buenos Ayres, previously to which it had formed a sort of theocratical commonwealth, under the government of the Jesuits. It was this circumstance that led to their banishment from Portugal in 1759, and from Spain in 1767. (See *Jesuits.*) At the time of the abolition of the order, their state embraced above forty missions (*doctrinæ*), comprising, besides Paraguay properly so called, Tucuman, Rio de la Plata, and the *corregimento* of Tarja; the seat of the ruling provincial and his four counsellors was at Cordova. No European was permitted to enter their territory; forts were erected, an armed force maintained, and the commerce was entirely in their hands. In 1752, Spain, having ceded seven of the Jesuit missions to Portugal, the society, after vainly throwing every obstacle in the way of the cession, finally instigated the natives to armed resistance; but their forces were defeated by the united Spanish and Portuguese armies (1756), and the order was expelled from Paraguay. (See Southey's *History of Brazil.*) In 1810, the junta of Buenos Ayres sent a body of troops to depose the Spanish governor of the province but they were forced to retreat. The inhabitants, however, soon after deposed the governor themselves, and formed a junta, which administered the government in the name of Ferdinand VII. In 1813, they proclaimed Paraguay a republic under two consuls—doctor Francia and Yegros. At the end of the year, the former caused himself to be named dictator for three years, and, at the expiration of that term, for life. In 1826, he first declared Paraguay independent, and, in 1827, its independence was formally acknowledged by dom Pedro, then emperor of Brazil. Under the domination of doctor Francia, Paraguay has been reduced to order, and advanced considerably in prosperity, although he has committed many most outrageous acts of tyranny. The celebrated Bonpland, who received orders to leave the country in 1829, was afterwards detained until February, 1831, having been confined nine years. The two travellers Rengger and Longchamps, who were detained in the country six years (1819—1825), have published an *Essai sur le Gouvernement dictatorial du Doctor Francia* (Paris, 1827; English, London, 1830).

The inhabitants are Creoles, who compose about seven tenths of the population; natives (*Guaranas*), one tenth; the blacks and mixed breeds, with a few hundred Spaniards, the remainder. The standing army of the dictator consists of 5000 men; the militia, of 20,000. The climate of Paraguay is mild and healthy, but moist; the face of the country is level, and the soil in general fertile. Tropical fruits, corn, and the vine, thrive very well; the sugar-cane, rice, maize (of which the natives make an intoxicating drink), excellent tobacco, indigo, various drugs, such as jalap, quinquina, rhubarb, &c., and many valuable forest trees, abound. The *matte*, or Paraguay tea-plant, is a small plant, the leaves of which resemble senna; they are dried, and used all over South America, in the form of an infusion, as the tea of China is used with us. The principal articles of export are matte, tobacco, sugar, cotton, wax, and tallow and hides obtained from the immense herds which roam in the vast plains of Paraguay. The ostrich, parrots, boas, rattle-snakes, cougars, and jaguars are among the wild animals.

PARALLAX; the angle formed by two different lines of view drawn towards one and the same object. Suppose a point is seen from the two ends of a straight line; the two lines of view towards that point form, with the other straight line, a triangle whose angle at the object is the parallax. The parallax is of particular importance in astronomy for the calculation of the distance of heavenly bodies. These may be observed from very different points on the globe, and appear accordingly, and according to their distance at different places in the heavens. The astronomer, however, considers himself at the centre of the globe, calculates the place of the heavenly body with reference to this imaginary place of observation, and calls the place thus found the *true* or *mean*, in contradistinction to the *apparent* place, observed from the surface of the globe. If the heavenly body were seen precisely in the horizon, and if we suppose, at the same time, another line of view drawn from the centre of the earth to the same body, these two lines of view would include, with the radius of the globe, a right-angled triangle, in which the angle at the heavenly body would be its horizontal parallax, and the hypothenuse the distance of the star from the centre of the earth. From this horizontal parallax, therefore, we may calculate the distance of the heavenly body according to trigonometrical laws. The horizontal parallax, it is true, cannot be observed directly, but the parallax of altitude can be so observed. This expression designates the angle at the star, when elevated above the horizon. From the parallax of altitude follows the horizontal parallax, and hence the distance.—See Bode's *Introduction to Astronomy*, 3d edit. (Berlin, 1808, vol. i. sect. 542 et seq.)—It ought to be added, that this parallax is called the *daily*, in contradistinction to the *annual*, by which, in general, is understood the difference of the place of a heavenly body as seen from the earth and from the sun; particularly, however, the angle formed by two lines from the ends of the diameter of the earth's orbit to a fixed star, which angle, on account of the immense distance of the fixed stars, is too small to be ascertained. See *Fixed Stars*.

PARALLELISM OF THE EARTH'S AXIS is used to denote that invariable position of the terrestrial axis by which it always points to the same point in the heavens, abstracting the trifling effect of nutation, &c. See *Nutation*.

PARALLEL LINES, in mathematics; two lines which, continued *ad infinitum*, never approach, or remain always at the same distance. The theory of parallels is of the highest importance in mathematics, being an essential element of most demonstrations; yet, though every thing asserted of them in mathematics is evident, the strict demonstration of the theory has given mathematicians great trouble, and not a few have lost much time, and some even their reason, in the attempt. In this respect, the theory of parallel lines is somewhat like that of the squaring of the circle.

Parallel is often used metaphorically, to denote the continued comparison of two objects, particularly in history. Thus we speak of drawing an historical *parallel* between ages, countries, or men. Plutarch wrote biographical *parallels*. *Parallel passages* signifies passages which agree in import; as, for instance, the parallel passages in the bible.

Parallelism, in Hebrew poetry, is the correspondence of two successive lines in imagery, sense, or grammatical construction.

Parallel circles, or *circles of latitude*, are those circles which run parallel to the equator, and become therefore smaller and smaller towards the pole. See *Latitude*.

Parallel lines, in sieges, are those trenches which generally run parallel with the outlines of the fortress. They serve as places for concentrating the forces to be directed against the fortress, and are usually three feet deep, from nine to twelve feet wide, and of a length adapted to the circumstances of the case. Generally three parallel lines are requisite before a breach is made, the most distant of which is from 600 to 900 paces from the covered way of the fortress; and the last receives the apparatus destined to effect the breach, and is made on the glacis itself. The communication from one to the other is effected by means of ditches. Vauban first made use of them in 1763, at the siege of Maestricht.

PARALLELOGRAM OF FORCES is a term used to denote the composition of forces, or the finding a single force that shall be equivalent to two or more given forces when acting in given directions.

PARALLELOPIPED, in geometry; a regular solid, comprehended under six sides or parallelograms, the opposite ones of which are similar, parallel, and equal to each other.

PARALLEL SAILING, in navigation, is the sailing under a parallel of latitude. See *Navigation*.

PARALOGISM, in logic; a false reasoning, or a fault committed in demonstration, when a consequence is drawn from principles that are false, or, though true, are not proved; or when a proposition is passed over that should have been proved by the way.

PARALYSIS. See *Palsy*.

PARAMATTA. See *Observatory*.

PARANA RIVER. See *Plata, La*.

PARANYMPH. See *Marriage*.

PARAPET, in fortification; an elevation of earth designed for covering the soldiers from the enemy's cannon or small shot.

PARAPH; a particular character or flourish added to the signature of a person, to render the counterfeiting of it more difficult. With some nations they have gone out of use. With others (e. g. the Spaniards) they are as customary, and take as much room as in the middle ages; indeed, they often affix the paraph, without the name, to official papers.

PARAPHERNALIA are the woman's apparel, jewels, and other things, which, in the lifetime of her husband, she wore as the ornaments of her person, to be allowed by the discretion of the court, according to the quality of her and her husband. The husband cannot devise such ornaments and jewels of his wife, though, during his life, he has power to dispose of them. But if she continues in the use of them till his death, she shall afterwards retain them against his executors and administrators, legatees, and all other persons, except creditors, where there is a deficiency of assets.

PARAPHRASE; the setting forth of the sense of a writing in a more clear and ample manner than it is given in the original. When the original is in a foreign language, the paraphrase differs from a mere translation, in the circumstance, that the object of the paraphrase is always to explain or to develop more fully the meaning of the original. A paraphrase of the Lord's prayer, for instance, is a composition in which the ideas of the prayer are applied more particularly to the duties of life, or set forth more in detail.

PARASANG; an ancient Persian measure, different at different times, and in different places, being sometimes thirty, sometimes forty, and sometimes fifty stadia, or furlongs.

PARASELENE; a mock moon, seen usually in a ring round the moon. See *Optics*.

PARASITES, or PARASITICAL PLANTS, in botany; such plants as are produced out of the trunk or branches of other plants, from whence they receive their nourishment, and will not grow on the ground; as the misletoe, &c.

PARASOL. It appears, from ancient monuments and descriptions, that this well-known instrument, or something exceedingly resembling it, was used among the ancients, not for the purpose so much of preservation from the rays of the sun as in religious ceremonies and processions. In the festivals of Ceres and Minerva, the young females who celebrated them bore, among other sacred instruments, the parasol: it was, in fact, one of the most ancient marks of dignity that we find indicated either by relics of art or by authors. In process of time, when the Romans began to lay aside the simple habits of their forefathers, the parasol, by a natural transition, began to be used for the purpose to which it is still applied. The matrons, particularly, used to be followed by slaves, whose office was to protect the delicacy of their charms by intercepting the solar heat by the agreeable shade of the parasols. They were constructed of wands, or twigs, disposed in such a manner as to admit of their being put up or down, in much the same way as those used at the present day. The substance employed was often of rich stuff, such as silk, &c., of showy colours, and elegantly embroidered. In many countries, where the sun is powerful, it is well known that parasols are used by men, as well as women.

PARCÆ. See *Fates*.

PARCHMENT, used for writing, is prepared from the skins of sheep and goats. These, after being steeped in pits impregnated with lime, are stretched upon frames, and reduced by scraping and paring with sharp instruments. Pulverized chalk is rubbed on with a pumice-stone resembling a muller, which smooths and softens the skin, and improves its colour. After it is reduced to something less than half its original thickness, it is smoothed and dried for use. Vellum is a similar substance to parchment, made from the skins of very young calves. Next to the papyrus, the skins of animals, in the form of parchment and vellum, were extensively used for writing by the ancients from a remote period. When Eumenes, or Attalus, attempted to found a library at Pergamus, 200 years B. C., which should rival the famous Alexandrian library, one of the Ptolemies, then king of Egypt, jealous of his success, made a decree prohibiting the exportation of papyrus. The inhabitants of Pergamus set about manufacturing parchment as a substitute, and formed their library principally of manuscripts on this material, whence it was known among the Latins by the name of *Pergamena*. The term *membrana* was also applied by them to parchment. The Hebrews had books written on the skins of animals in David's time; and Herodotus relates that the Ionians, from the earliest period, wrote upon goat and sheepskin, from which the hair had merely been scraped off. These facts show that parchment was not invented at Pergamus, but it was much improved there, and first made in large quantities as an article of trade. Parchment was at first yellow; it was afterwards made white in Rome. At present any colour can be given to it.

PARDO, EL; a pleasure-palace of the kings of Spain, three leagues N.W. of Madrid. It was built in the reign of Charles V., and is adorned with frescoes, pictures, and statues. It contains apartments for all the royal family, a chapel, and a theatre, and has fine gardens attached to it. The forest of the Pardo is fifteen leagues in circuit

PARDON. In England, in all cases of crimes, except where there is an impeachment, a pardon from the crown may be granted before a trial, as well as after; and it stops further progress in the inquiry and prosecution at whatever time it is granted. In cases of impeachment, no pardon can now be granted by the king while the prosecution is pending; but, after conviction of the offender, it may be granted, as in other cases. This is in virtue of the act of settlement of the crown, 12 and 13 William III., ch. 2. In America, the constitution provides, that the president "shall have power to grant reprieves and pardons for offences against the United States, except in cases of impeachment." The senate has the whole power of trying impeachments. It is presumed, therefore, that an act of congress only can give the benefit of a pardon in cases of impeachments, if such power exists in any department of the government. By the same constitution, "judgment, in cases of impeachment, shall not extend further than to removal from office, and disqualification to hold and enjoy any office of honour, trust, or profit, under the United States." The party remains, nevertheless, liable to indictment and punishment for the offence, by the common law tribunals, as in other cases. Similar provisions exist generally in the state constitutions, or state laws, throughout the Union. In German jurisprudence, the word *abolition* is used to signify an act of mercy on the part of the sovereign, releasing some one from a deserved punishment without examination, or putting an end to a trial already commenced, before a judgment, determining the guilt or innocence of the accused, has been pronounced. This prerogative of the sovereign is limited, in several states, by the constitution, particularly in cases of public impeachment against officers of the state; for instance, in Wurtemberg. In Bavaria, abolition, after the trial has commenced, is, in all cases, unconstitutional. In several countries, the prince has the right of stopping a process already commenced, for an uncertain time, and keeping it undecided, which is called *Sistirung*. The king of Prussia availed himself of this arbitrary power but a few years ago, in the case of an action brought by a citizen against one of his officers for slander.

PARE, Ambroise, the father of French surgery, was born in the beginning of the sixteenth century, at Laval, and studied at Paris. In 1536 he accompanied René de Mont Jean during his campaign in Italy, and, in 1552, became surgeon to Henry II., under whose successors (Francis II., Charles IX., and Henry III.,) he held the same post. His enemies were numerous among the physicians, who accused him of having poisoned Francis II.; but Paré, having cured Charles IX. of a dangerous wound, established himself so strongly in the favour of the court, that Charles allowed him, though a Protestant, to escape the massacre of St Bartholomew, by taking refuge in his own apartments. He died at Paris, in 1590. We are indebted to him for improvements in the treatment of gun-shot wounds, and in the operation of trepanning. He also restored the practice of tying up divided arteries, operated on articular concretions, &c. His works appeared in French, in 1561; in Latin, in 1582.

PAREGORIC ELIXIR. Paregoric is a preparation of opium, and has different names in the pharmacopœias of different nations. It is quite a popular medicine, and is much used by nurses as a palliative in many of the lighter, but more or less painful maladies of infants. As, however, there is some uncertainty about the effects of opium, in all cases, and as there is much in the constitution of infants to increase this uncertainty, in the use of this and almost all medicines, it is the safest course never to give paregoric, or any other preparation of opium, in their diseases, unless under the direction of a physician.

PARENT AND CHILD. The duty of maintaining and educating a child naturally falls upon the parent; and this precept of the law of nature is recognised and enforced among all nations. The laws of the Athenians enforced the duty of the parent towards the child, so far as to prohibit the disinheritance of the child, but for reasons to be approved by a magistrate; and the laws of some modern countries restrain the right of the parent in disposing of his property by will, or during his life, so as to defeat the inheritance of his children. The laws of England, and those of the United States (whose code is founded upon the common law of England), only require the parents to maintain the child during his minority, or until he arrives at the age of twenty-one years, or such other age as is fixed upon as that of majority, unless afterwards the child is unable to maintain himself, in which case the laws more generally, if not universally, in civilized states, impose upon the parents, or other relatives, the duty of maintaining him; and so, *vice versa*, in case of the parents being unable to maintain themselves, the law imposes the duty upon the children. This law, enjoining the duty of maintenance reciprocally between parents and children, and extending it, in certain cases, to other relatives, is founded partly on the motive of exonerating the public from this charge. Such is the ground of the provision in those countries and states in which the common law of England is the foundation of the system of jurisprudence. But in many countries, of which the legal system is engrafted on the civil law, the regulations are extended more minutely to the mutual rights and obligations of members of the same family. The father has the right of custody and control of his children, and is entitled to their service and obedience, unless he is insane, or, by some act or circumstance specified by the laws, forfeits, or is deprived of these rights; for the child, though to many purposes under the dominion of the father until the age of majority, is not absolutely so; on the contrary, the law recognises the existence of the child, and extends protection to it, not only from the time of the birth, but even before; for a child may inherit an estate that descends during the time of the mother's gestation. In case of the gross abuse of the parental authority, or egregious disqualification of the parent for the office of guardian, the law extends its protection to the child by the appointment of another guardian. All systems of laws do not agree as to what circumstances give proper occasion for the substitution of another guardian in the place of the parent. The insanity or idiocy of the parent, which divests him of all moral or legal capacity or responsibility, will, of course, under all laws, exempt the child from all duty of obedience. The laws also usually make provision for cases of abuse and extreme cruelty on the part of the parent. In case of the decease of the father, the law transfers his authority over his children to the mother, but usually with some qualifications and limitations, making a distinction, in this respect, between sons and daughters, giving the mother a more extended authority over the daughters, for the obvious reason that she is supposed to be more capable of governing them, and superintending their education. The laws relating to the mutual rights and duties of parents and children, are obviously a very important part of every code, and have a very intimate connexion with the state of society, and with civil institutions. The welfare of the community is, for instance, directly and deeply affected by the education of youth, and one object of every code is to encourage such a course of education as may form good citizens. Solon provided, for this purpose, that a child, not educated by the parent, to some art or trade, should not be obliged to support the parent in old age. In ancient times, when paternity was a great foundation of civil authority, the parental rights were much more absolute than in the modern, extending, in some countries, to the right of life and death, and continuing during the life of the two parties. The Persians, Egyptians, Greeks, Gauls, and Romans, allowed to fathers a very absolute dominion over their children. Among the Romans, it was not an absolute power of life and death, but a regulated domestic jurisdiction, gradually softened by the progress of refinement. Bynkershoeck thinks the power of life and death, on the part of the father, ceased during the reign of Adrian. In the time of Constantine, the putting to death an adult child, by the parent, was made a capital crime. No such power is permitted among modern civilized nations, as we have already seen; but provisions are made, by law, to prevent and punish cruelty on the part of the parent. But the law every where allows the parent to inflict moderate chastisement on the child—a liberty which must be given, in order to secure authority on one side, and obedience on the other. The more general time of majority of the child is the age of twenty-one years, when he is liberated from the authority of the father. This is the age of majority in England and the United States; and it is so now, also, in France, though it formerly commenced there at the age of twenty-five.

PARERE; in some countries, the written decision of impartial merchants on litigated points, concerning which parties wish to know their opinions.

PARGA; a seaport on the coast of Albania, opposite the southern point of Corfu. At the time of the fall of the Roman empire, this city was built on a rock, washed on three sides by the sea, and forming in the rear a steep cliff, the summit of which was crowned by an almost impregnable citadel. The city lies at the mouth of a river (the Acheron of the ancients). It is surrounded with walls, and contains two harbours, formed by a small island, and protected by a battery. The prospect from the citadel is magnificent. The neighbouring country is fertile, and the district belonging to the city is separated from the limits of Albania by a chain of elevated mountains. Parga is hardly mentioned in history till 1401, when it entered into an alliance with Venice, which continued till the fall of Venice, in 1797. Being independent of Ali Pacha, the tyrant of Albania, it was the asylum of all who sought to escape his fury, and became the seat of frequent intrigues against his government. Ali Pacha therefore desired to get possession of it. In 1798, he found means to reduce Prevesa and the other fortresses on the neighbouring coast; but Parga set his arms at defiance. The Pargiots repelled his attacks till 1814, when they applied to the British in Corfu, and received a garrison from them, with the expectation of being incorporated with the republic of the Ionian islands; but the British government refused to receive the submission of the Pargiots. They did not overlook the importance of Parga to Corfu; but the dread of constant hostilities with the Albanians led them to enter on negotiations with Ali; and he was put in possession of Parga on condition of his paying a pecuniary indemnity to those inhabitants who should choose to change their residence. The population consisted of about 5000 Albanian Greeks. The surrender to Ali took place in 1819, and almost all the inhabitants emigrated to the Ionian islands, after having burned even the bones of their ancestors.

PARHELIA. See *Optics*.

PARIAN CHRONICLE. See *Arundelian Marbles*.

PARIAS; Hindoos of the impure castes of the Sutas, Vaidehas, and Chandalas, so numerous a class that Menu, in his tenth chapter, has not even taken the trouble to enumerate them. The fourth caste, or Sudras, is widely separated from the three privileged ones (see *Caste*); but still further removed and more degraded are the mixed and impure classes, the number of which, according to some, amounts to eighty-four. The three castes above named are the only ones called *Parias* in the code of Menu (x. 26); they are prohibited from all approach to any thing pure, as if they were infected with leprosy. (See *Hindoos.*) Heeren thinks that the difference of colour between these Parias and the higher classes shows them to have been the original inhabitants of the country, the *Helots* of the Indians, and deprived of all rights for defending their independence. See *Delavigne*.

PARINI, GIUSEPPE, one of the most celebrated Italian poets of recent times, was born at Busisio, a village of the Milanese, in 1729, studied polite literature and science at Milan, and devoted himself, in compliance with the wishes of his father, but contrary to his own inclination, to theology. In spite of narrow circumstances and a feeble constitution, he laboured assiduously in his studies, and early made some essays in poetry. To relieve his wants, he published a collection of these youthful productions, under the name of *Ripano Eupilino*, in 1752. It was successful, and he was admitted a member of the academy of the Arcadians at Rome. Having been appointed preceptor in the Borromeo and Serbelloni families, he was now enabled to apply himself more exclusively to his favourite studies. His familiarity with the manners of the great led him to attempt a delineation of them in a species of didactic and dramatic satire, entitled *Il Giorno* (the Day.) The *Mattino* (Morning) appeared in 1763, and the *Mezzogiorno* (Noon) two years later. This poem extended his reputation, and he was made professor of rhetoric in the gymnasium of the Brera. His lectures on the belles-lettres have been printed. The completion of the *Giorno* was often interrupted by the troubled state of Italy, but was finally effected under the title of *Il Vespero* (Evening) and *La Notte* (Night.) He died in 1799. His works have been published in six volumes (1801—1840).

PARIS; the capital of France, the second city in Europe for population, and the fourth for extent, is situated in the northern part of the kingdom, on both banks and two islands of the Seine; lat. 48° 50′ 14″ N.; lon. 2° 20′ 15″ E. of Greenwich, 20° E. of Ferro. It is 112 miles S. E. of Havre, at the mouth of the Seine; 472 N. W. of Marseilles; 304 N. E. of Bourdeaux; 225 S. E. of London. The environs do not exhibit the same variety as those of London; instead of the gardens, parks, and country-seats which surround the great capital of the world, on the banks of the Thames, Paris on several sides presents large tracts of unenclosed cornfields. The stream of life in the great streets, the crowd of wagons, carriages, and horsemen, is not so great as in the neighbourhood of London. The finest approach to Paris is by St Germain; a broad, straight street, lined with lofty buildings, leads from Neuilly to the city, where the view is terminated by the unfinished Arc de l'Etoile, which stands on an elevation; from this to the charming Champs Elysées, extends a walk about a mile and a half in length, planted with fine elms, and lined on both sides with handsome houses and beautiful gardens. You next arrive at the Place Louis XV., pass the Tuileries, with its gardens and statues, the Seine, with its bridges and quays, the Place Vendome, with its triumphal column, the Palais Bourbon, where the chamber of deputies assembles,—you are in Paris. Its circuit, as marked by a wall raised in 1787, to prevent smuggling, is about fourteen miles; its greatest breadth three miles; its greatest length somewhat above five. The original soil on which Paris is built was a marly gypsum, and a great portion of the southern part of the city is built over the immense quarries which form the catacombs. The eastern sections, the suburb St Antoine, the Quartier au Marais and the Cité are badly built. From the Cité the streets run north to the temple, and south to the pantheon, but without being broad or elegant; in recent times, the direction has been given them south to the suburb St Germain, and north to the Tuileries. The total number, exclusive of *culs de sac*, is 1142, mostly narrow. They are not so clean as they might be, since the water is carried off by only one gutter, in the centre of the street; a few of them are paved in the modern style, and provided with footpaths. The Rue de Rivoli, Rue de Castiglione, and Rue de la Paix, are handsome streets. The eighteen boulevards are broad streets, planted on both sides with trees, and forming beautiful promenades. Those outside of the walls are called the *exterior boulevards*. The interior boulevards are divided into the old, or northern, and the new, or southern, and are of great length, with many streets running into them. Many of the trees were cut down in July, 1830.

Among the finest of the seventy-four public places, are the Place Vendome, and the Place du Carrousel, which separates the Tuileries from the Louvre. The Place Louis XVI., or de la Concorde, in which is a monument erected to the memory of Louis XVI., but which has recently been consecrated to the charter, is also one of the most beautiful in Paris. The Champ de Mars, Place des Victoires, Place de Grève, before the Hotel de Ville, Place du Chatelet, Place des Vosges, &c., deserve mention. The Seine, which flows from east to west, divides Paris into two unequal parts, and is crossed by nineteen bridges. It is not more than half as broad as the Thames, and, as it is not enlivened by shipping, it presents little attraction, except in the quarter of the Tuileries. Here, on one side are the Louvre and the Tuileries, with its gardens, and on the other, from the Palais Bourbon to the Pont Neuf, a succession of fine buildings. The older bridges were all constructed at points where the river is divided by islands. The Pont Neuf has twelve arches, and is 1020 feet long; the Pont Royal, with five arches, was built by Louis XIV.; the Pont de Louis XVI., or de la Concorde, completed in 1790, has five arches; lower down the river, and opposite the Champ de Mars, is the Pont d'Jéna; and higher up, opposite the Jardin des Plantes, is the Pont d'Austerlitz, a fine iron bridge. The Pont des Arts, opposite the Louvre, is also of iron, but is intended merely for foot passengers. The last three were built during the reign of Napoleon. The Pont de l'Archeveché, of three arches, was built in 1828; the Pont des Invalides, an iron bridge, in 1829; and the Pont d'Arcole, also of iron, in 1828. The quays are forty-nine in number; they are stone embankments, on both sides of the river, and around the islands; the whole extent is about fifteen miles. The sewers fall into the river through arches under the quays. Many *passages*, or covered streets, with shops fitted up in an elegant style, have been constructed within a few years. Paris is supplied with water, partly be aqueducts, and partly from the Seine; there are eighty-six fountains in the public places and boulevards, some of which are distinguished for their architecture. The houses are generally very high (seven or eight stories), and mostly of stone. For the magnificence of its palaces, the French capital surpasses every other city in Europe. The Louvre, the Tuileries, the Luxembourg, the Palais Royal, are described in separate articles. The Palais Bourbon, on the left side of the Seine, now the place of session of the chamber of deputies; the Garde Meuble, on the Place Louis XV., designed for the safe-keeping of the crown jewels, and costly articles of all sorts; the Hotel des Invalides; the military school; the Palace of the Legion of Honour; the mint; the Hotel de Ville; the Palais de Justice; the corn market (Halle au Blé); and the new Bourse (exchange), are among the other most remarkable public buildings. Of the churches, Notre Dame, Ste. Geneviève, now the pantheon, St Sulpice, St Eustache, and St Roch are the principal. The hospitals and hospices are under good arrangements. See *Hospitals; Blind, Institutions for the; Dumb and Deaf; Sicard, Haüy, Lachaise;* and for the theatres, see the latter part of this article.

The finest public monument in Paris is the column in the Place Vendome, erected under the superintendence of Denon, in commemoration of the victories of the campaign of 1805. It is an imitation of Trajan's pillar, in Rome, 134 feet high, and 12 feet in diameter. It is of brass, and the material was furnished by the 425 cannon taken from the Austrians and Prussians in that campaign. It is covered with 378 plates of brass by Lepere, skilfully united, and containing bass-reliefs, winding round the pillar, and representing scenes of the campaign. The statue of Napoleon was removed in 1814. The triumphal arch in the Place du Carrousel is forty-five feet high, and was erected after the war of 1806. In 1815, the horses of St Mark's, which had been placed on its summit, were claimed by the Austrians, and carried back to Venice. The Arc de l'Etoile, at the Neuilly barrier, begun in 1806, is still unfinished. The gate of St Denis, a triumphal arch erected by Louis XIV., is admired for its fine proportions and its execution. In 1818, a new equestrian statue of Henry IV. in bronze, was erected on the Pont Neuf. In the Place des Victoires, there is an equestrian statue of Louis XIV. In the new quarter, called *Villa Trocadero*, on the heights of Chaillot, is an obelisk 120 feet high, in commemoration of the campaign of 1823, in Spain.

Paris has numerous public libraries, and the access to all is free. The royal library, in the Rue Richelieu, one of the first in Europe, is rich in literary treasures and rare manuscripts: it also contains a large collection of coins and medals. The library of the national institute is small but select. The Bibliothèque Mazarine, those of the arsenal of the mining school, and of the court of cassation, deserve to be mentioned. The chamber of deputies and that of peers, also, have good libraries. (See *Libraries.*) (Concerning the museum of arts in the Louvre, see *Louvre*, and *Museum.*) The museum of natural history, the richest of the kind in Europe, is in the buildings of the Jardin des Plantes. The extent of this collection, the rarity and richness of many of the specimens, and the excellent arrangement of the whole, deserve all praise. The garden itself, and the menagerie attached to it, are not less worthy of attention. The museum of French monuments was intended for the preservation of the memorials of French history, taken from the different monasteries, churches, and public buildings, at the time of the French revolution (see *Lenoir*); but after the restoration, this collection was broken up. The conservatory of arts and manufactures is a large collection of models, of high interest to every artist. Paris is also the literary capital of France. At the head of the public literary institutions is the national institute. (See *Institute.*) At the Bureau des Longitudes are the most distinguished astronomers and geometricians. Numerous learned societies are devoted to the cultivation of particular departments—medicine, surgery, agriculture, the fine arts, manufactures, &c. The university of Paris, abolished during the revolution, but restored by Napoleon, is divided into five faculties—theology, jurisprudence, medicine, philology, and natural science. The lectures are gratuitous; the number of students is about 4000. There are also in Paris four lyceums, called *colleges*—those of Louis XIV. and Henry IV., the College Bourbon, and that of Charlemagne. The Collège Royal de France has professors of mathematics, astronomy, chemistry, history, law, Oriental languages, &c. The school for medicine and surgery is a well endowed institution. In the Jardin des Plantes, and the museum of natural history, thirteen different courses of lectures on zoology, mineralogy, geology, botany, &c., are delivered. In addition to these institutions, there is also a school for the fine arts. The normal school is designed for the education of instructers in the secondary schools throughout the kingdom; the military school for the education of 500 youths, whose fathers nave fallen in the service of their country; the polytechnic school, a favourite project of Napoleon, for the education of engineers, architects, &c. The veterinary school at Alfort also deserves to be mentioned. There are also numerous private societies, such as the four Protestant religious and philanthropic societies; the Bible society, with 120 branches; the missionary society; that of Christian morality, &c. The *société des bonnes lettres* has been known for its absolute monarchical principles; that of the *Athênée de Paris* for its constitutional principles. Some of the most noted prisons are the Conciergerie; La Force; St Pelagie, in which are confined persons guilty of political offences; the Madelonnettes, for females; the

Bicétre, where criminals condemned to death and perpetual imprisonment, are confined temporarily.

Various estimates of the population of Paris have been made at different periods. In 1590, although the population had been reduced by religious wars, it was about 200,000. In the latter part of the reign of Louis XIV., it was about 510,000; in 1762, it was 576,000; in 1791, it was 610,620; in 1805, it was 547,750; in 1817, 713,966; in 1827, 890,431; in 1831, 774,338; in 1836, about 1,000,000, so that it has been almost doubled in the course of thirty-one years.

Paris is divided into twelve *arrondissements*, over each of which presides a mayor (*maire*); each *arrondissement* is divided into four *quartiers;* in each quarter is a commissary of the police, and in each *arrondissement* a justice of the peace. The municipal council of Paris is the council-general of the department of the Seine, at the head of which is the prefect of the department, who, previous to the late revolution, was appointed by the crown. A prefect of the police, whose jurisdiction extends over the whole department, has the charge of the public safety and of the health department; he has under him a municipal guard, and a corps of *sapeurs-pompeurs* (firemen.) The national guard maintains the public peace of the city, preserves order, and defends the national liberties; their number is about 80,000.

The consumption of some articles of food for 1829 was as follows:—72,590 oxen; 14,500 cows; 66,580 calves; 380,730 sheep; 85,180 hogs; and others in proportion. The expenditure for the city, in 1829, amounted to 51,748,117 francs; the revenue was 51,748,547. Since the beginning of the present century, the manufactures of Paris have rapidly increased, and it is now the principal manufacturing city in the kingdom. The value of exports for 1829 was 42,493,341 francs. Among the principal articles manufactured are—

	Francs.
Salts, acids, and oxides, to the amount of	3,500,000
Refined sugar,	28,300,000
Cotton goods,	18,200,000
Silks and cashmeres,	12,500,000
In horology,	19,765,000
In typography,	8,800,000
Bronzes,	5,250,000

&c., &c. All sorts of articles of luxury and fashion are made with the greatest elegance and taste. It is estimated that 40,000 letters leave Paris daily, and 30,000 arrive during the same period. Numerous diligences (900) run to all quarters of the kingdom, and a ready communication between all parts of the city is kept up by the fiacres, omnibuses, favourites, cabriolets, &c., &c.

Those who suppose Paris to be merely a theatre of frivolity and amusement will find themselves much mistaken. That, in a population of about 1,000,000, of which above 50,000 are strangers who resort to Paris merely for pleasure, there should be a great number of licentious individuals, is to be expected; but who would judge of the character of the Parisians from the public promenades of the Palais Royal? The truth is, that, in these haunts of vice, the greatest number of visitors are the strangers. In the higher classes, there is little difference in the character of society throughout Europe. In Paris, however, it is distinguished for delicacy, polish, refinement, and ease. The middling class in Paris, as in all France, is strongly characterized by the strictness and elevated tone of its manners. The lower class is industrious, but improvident, and shows none of that ferocity which the excesses of the revolutions of 1789 lead some people to expect; and the events of the revolution of July, 1830, exhibit the Paris populace in a very favourable light. Gayety, wit, intelligence, with decency and politeness of manners, are common to all classes of the French, particularly of the Parisians. The women in France have a great influence on the character of society, and are distinguished for their grace and fascination of manner.

Among the best French works on Paris are Dulaure's *Histoire civile, physique et morale de Paris* (3d edit., 8 vols., with plates, Paris, 1825); the *Description de Paris*, by the same; Mercier's *Tableau de Paris*, well done, and witty, but antiquated; Jouy's *Mœurs de Paris*, under the titles of *L'Hermite de la Chaussée d'Antin*, *Le franc Parleur*, &c.; Landon's *Description de Paris;* Lachaise's *Topographie Medicale de Paris* (Paris, 1822); count Chabrol's *Recherches statistiques sur la Ville de Paris*, &c.; the annual *Itinéraires*, &c.

Paris, History of. A Gallo-Celtic tribe, the Parisii, built the ancient Lutetia, on a swampy island in the Seine, before the birth of Christ. The name *Lutetia*, or city of mire, is said to have been given to the place on account of its muddy character. The inhabitants burned it when the Romans invaded Gaul. The latter rebuilt Lutetia, fortified the place, erected an aqueduct leading to it, and founded warm baths (*thermæ*). But Lutitia remained insignificant until the emperor Julian (360 A. D.) went into winter quarters there, and built a palace for himself. In 486, the Franks conquered it, and made it, in 508, the capital of their kingdom. Clovis embraced the Christian faith, and lived in the palace of the *thermæ*, of which ruins are found to this day in the street Laharpe. Clotilda, his wife, completed the church Ste. Geneviève, which he had begun. About 550, Childebert commenced the building of Notre Dame; 100 years after, St Landry founded the hospital Hotel Dieu. Towards the end of the eighth century, Charlemagne instituted the schools from which at a later period sprung the university. In 845, the Normans besieged the city, and burned it about 857. After Hugh Capet, count of Paris, the first king of the third race, ascended the throne, in 987, Paris remained the residence of the kings, until Louis XIV., whom the Fronde (q. v.) had driven from the capital in 1649, made Versailles the royal residence. Hugh Capet resided in the present Palace of Justice. The place increased, and was divided into four quarters. Under Louis the Fat, not more than about twelve francs of taxes were collected monthly at the northern gate, in the neighbourhood of the present street St Martin. In 1163, bishop Maurice de Sully erected the cathedral of Notre Dame, as it is still to be seen. In the same century, the Templars built their palace on the square, where at present is the market du Temple. In 1190 Philip Augustus, who had caused Paris to be paved, ordered a third enlargement, and divided the city into eight quarters. Until that period it had but three gates; now, it received fifteen. In the thirteenth century, St Louis founded the hospital of the Quinze Vingts for the blind, and a number of convents. After the abolition of the order of the Templars, in 1312, Philip the Fair, in 1314, caused the grand master Molay and several knights to be burned in the Place Dauphine (so called at least before the revolution of 1830; whether the name has been since changed, as inconsistent with the new order of things, we know not). Under Philip of Valois, Paris contained 150,000 inhabitants. The *black death*, so called, which ravaged Europe about the middle of the fourteenth century, destroyed half of the inhabitants. About this time, the Hotel de Ville, on the Place de Grève, was begun. In 1367, the fourth enlargement of Paris took place, under Charles V. Paris was now divided into sixteen quarters. Twenty years later, the Bastile was begun. Until that time Paris had two bridges; one towards the north, Le

Pont au Change; the other towards the south, Le Petit Pont. In 1378, the third, Le Pont St Michael, opposite the present street Laharpe, was built. The fourth bridge, Pont Notre Dame, was built soon after. In 1418, Paris was visited by famine and pestilence. 100,000 people perished in three months. In 1420, the capital of France was taken by the English. Charles VII. drove them out in 1436. In 1465, some attempts, though very imperfect, were made to light the streets at night. Under Louis XI. Paris contained 300,000 inhabitants. In 1563, the Jesuits established themselves there. Under Francis I., the fifth increase of Paris took place. Henry IV. besieged Paris; the city surrendered in 1594, and Henry made a triumphal entry. Henry IV. completed, in 1604, the Pont Neuf, begun by Henry III., in 1578. In 1614, the equestrian statue of Henry IV. (the first monument of this kind in France) was erected. In 1615, the palace Luxembourg (q. v.) was begun; in 1629, the Palais Royal (q. v.), in its old form; and in 1635, the Jardin des Plantes. Louis XIV. enlarged the city, and did much for the embellishment of it. In 1664, the Tuileries, begun by Catharine of Medici, were completed; in 1665, Perrault built the colonnade of the Louvre; and almost at the same time, the Hotel des Invalides (q. v.), the observatory, the gate St Denis. Under Louis XV. the Ecole Militaire was erected, and the church Ste. Geneviève completed. In 1763, the city erected the statue of Louis XV. on the place of his name, and a number of magnificent buildings. The revolution interrupted the embellishment of Paris, which Napoleon, zealous as he was to make the French nation the ruling power of Europe, and Paris the capital of the world, pursued with ardour, and accomplished a great deal.—A history of Paris is to a considerable degree a history of France, so much has this city, during the last centuries, concentrated in itself all the vital action of France. This has had several good and many evil consequences (see *City*); and true liberty, the life-blood which should animate all parts of the body politic, cannot be domesticated in France until the departments and provincial towns have resumed their proper importance. The preponderance of Paris over all France, not only in a political sense, but in literature, arts, customs, &c., is immense, and was most strikingly manifested during the revolution of the last century. (See *France*.) March 31, 1814, the taking of Paris concluded the campaign of the allies against Napoleon. The congress of Chatillon had been broken up. (See the article *Chatillon*, which contains, also, the chief events of the campaign from that time to the battle before Paris, March 30, 1814.) 30,000 men under Marmont, Mortier, and Compans, with 150 cannons, occupied the fortified heights before Paris, in a semicircle, from Charenton and Nogent on the Marne to Neuilly on the Seine. By degrees 120,000 men were brought against them. With the break of day on the 30th, the battle began. After an obstinate struggle, the allies succeeded in taking the heights of Belleville; the village Lavillette was taken by assault, whilst other troops advanced through Neuilly on the Marne and Nogent sur Marne towards Vincennes, where the bridge of Charenton was taken by assault, and where 150 *élèves* of the veterinary school of Alfort died a heroic death. Blucher, at the same time, drew near, passing through St Denis, and Montmartre was taken by assault at three o'clock in the afternoon. Marmont, in the mean time, had proposed an armistice to general Schwartzenberg, which was concluded at three o'clock. At six o'clock, counts Nesselrode, Orloff, and Paar, went to Paris, where the conditions of surrender were concluded on the 31st, at two o'clock in the morning. The corps of Marmont and Mortier were to leave Paris at seven o'clock, and hostilities were not to begin before nine o'clock. The city was recommended to the mercy of the allies. The victory of Paris cost the latter 9000 men; the French lost 4000, besides the prisoners, and 109 cannons. The troops of the allies were kept under strict discipline. The French made loud complaints of outrages, both in prose and verse; but, though it is impossible that so large an army should take possession of a hostile city without some cases of violence, the behaviour of the armies must be allowed to have been very strictly regulated, particularly if compared with that of the French armies in Vienna, Berlin, and other great cities, where cruelty was added to injury. The French even went so far as to complain bitterly of the allies for taking the works of art which Napoleon had carried from their countries.—See, for the military movements, Koch's *Mém. pour servir à l'Hist. de la Camp. de* 1814 (Paris, 1819, 2 vols.)—When, after a series of the grossest blunders on the part of the Bourbons, Napoleon returned to Paris in 1815, and lost the battle of Waterloo, Davoust received the command of about 60,000 men for the defence of Paris. It was difficult to attack the city, as formerly, from the north and east, because the heights and villages were fortified, and well supplied with artillery. The British therefore remained before these lines, and the Prussians passed over the Seine to attack Paris from Versailles. The city is weakest on this side, and might also be forced to surrender by cutting off all the supplies of provisions which come from Normandy. On June 30, therefore, the first and third Prussian corps marched to St Germain; the fourth remained in its former position until the arrival of the British; and, on July 2, the third corps marched through Versailles to Plessis Piquet, the first through Vaucresson to Sèvres and Meudon; the fourth, which was to act as a reserve, was placed at Versailles. The enemy had been driven back at Sèvres and Plessis Piquet, as far as Vaugirard and Montrouge, and had occupied Issy. A council of war, held at Paris, almost unanimously determined that Paris was untenable; but in order to make a last attempt, Vandamme advanced, on the morning of the third, with 10,000 men, and attacked Issy. He was repulsed after several hours' fighting, and the surrender of Paris was resolved on. The capitulation was concluded at St Cloud the same day. The French army was to leave Paris within three days, and cross the Loire within eight days: Montmartre was to be surrendered, July 5, and all the barriers on the 6th. July 7, the Prussian army entered the barrier of the military school, and part of the British army that of St Denis. Louis XVIII. arrived the next day.

To what has been said in the article *France* respecting the revolution of 1830, we only add, as concerning Paris more especially, that, during that short and memorable revolution, the greatest part of the street lamps were broken; 4055 barricades thrown up with great rapidity, consisting of the pavement torn up for the purpose, of coaches and other vehicles, trees, &c.; 3,125,000 paving-stones were dislodged, and the paving the streets again cost 250,000 francs. The pavement of Paris consists of large stones.

Treaties concluded at Paris. 1. Peace between France and Spain on one side, and Great Britain and Portugal on the other, concluded February 10, 1763, which ended the seven years' war. France ceded Acadia (Nova Scotia), and Canada and Cape Breton to Britain; but she retained the right of fishing on the banks of Newfoundland. Great Britain restored Guadaloupe, Martinico, and St Lucia, to France, but retained Grenada, Dominica, and Tobago, also the colony on the Senegal and Minorca. To Spain she restored Havana, but received all Florida from Spain, while France ceded Louisiana to Spain.—2. Peace concluded, September 3, 1783, by Great Britain with France, Spain, and the United States, after several preliminary treaties, and on May 20, 1784, with the United Netherlands. Great Britain acknowledged the independence of the thirteen United States; France received back with St Lucia the other colonies, and retained Tobago and Senegal; Spain retained Minorca, and received back Florida; the Dutch were obliged to leave Negapatam in the hands of the British.—3. The peace of May 30th, 1814, consisting of four separate treaties of France with Austria, Russia, Prussia, and Great Britain. (See *France since* 1814.) The German states were to be united in a federative system; Switzerland's independence was guaranteed; the house of Orange was to reign in the Netherlands, and Belgium to be added to its dominions, &c.—4. Peace or treaty of November 20, 1815. (See *France since* 1814) On the same day, Austria, Russia, Great Britain, and Prussia, renewed the treaty of Chaumont (q. v.), and united for the maintenance of the second peace of Paris—that of November 20, 1815. The two last treaties are often spoken of as the " first and second peace of Paris."

Paris Theatres. (For the history of the French drama, see the article *France*, division, *Dramatic Art and Poetry*.) In genteel comedy, comic opera, and the lighter comedy, the French stage is inimitable; and a visitor in Paris cannot fail to observe the delicate taste of the Parisians in every thing relating to the stage. The Parisian, in his principal theatre, witnesses the constant repetition of the masterpieces of his classic poets, with an occasional novelty in the same style, and is satisfied if the actors perform their parts well; but his judgment of their performance is strict, and his criticism severe. There is no city where the people attend the theatre so regularly. The British and German theatres are much below the French in delicacy and refinement: any thing low or vulgar is instantly condemned in a Paris theatre, and the highest regard is paid to the modesty of the female sex. The constant noise which is heard in the British and German boxes is unknown in France; the most popular pieces are never interrupted by loud bursts of applause. The police prevent confusion at the entrances, and each person stations himself *à la queue* of those already collected; that is, each stands behind another, so that several files are often formed; and no one is suffered to leave his position till the doors are opened. The number of theatres in 1830 was twenty-four. The principal are supported by the government; among them are, 1. The grand opera (*Académie Royale de Musique*.) The richest decorations, an enchanting ballet, splendid costumes, beautiful scenery, and a powerful orchestra of 200 musicians,—are all here united to bewilder the senses. The French heroic opera with ballets, the *opera seria*, and some pantomimic ballets, are represented here. The serious French vocalism can never be agreeable to an ear accustomed to Italian and German music, especially when it is carried to excess, as is often done in this theatre. The rhythmical recitatives and the choruses are more pleasing. On this stage, the operas of Gluck and Sacchini are, as it were, at home; and no where else in Europe have they been represented in such perfection. The dances which accompany the grand operas, and the grand pantomimic ballets which follow the opera, excel every thing of the kind, except the grand Italian opera in London. On no other stage on the continent is the ballet, as a whole, so complete as in the Paris grand opera. The beautiful opera house in the rue Richelieu was closed after the assassination of the duke of Berri, in 1820, and finally taken down. The present opera house in the Chaussée d'Antin was opened in 1821; it accommodates 2000 persons. The most celebrated singers and dancers in the records of this theatre are Mad. Guimard, St Huberty, Arnauld, Armand, Branchu, Madlle. Gardel, and MM. Lais, Lainez, Vestris, Gardel, Milon, and Duport. The most eminent recent performers have been MM. Nourrit, Derivis, Dabadie, Bonel, Prevost, and Mad. Grassarie, Dabadie, Sainville. The best female dancers were Mad. Bigotini, Hulin, Anatole, Albert, Marinette, Fanny Bias, Elie, Noblet; and the male dancers MM. Paul, Albert, Noblet, Milon, Montjoie, Capelle, Coulon, Gosselin, &c. 2. *Théâtre Français* properly called *Premier Théâtre Français*), in the rue Richelieu, is connected with the Palais Royal. It was first opened in the Hotel Bourgogne, in the year 1518. In 1650, Molière became an actor there. In 1689, it was removed to the rue Fossés St Germain; in 1770, to the Tuileries; in 1782, to the Odeon; and, in 1799, when this was burnt, to the present edifice, built by Louis. The interior is a sort of circus. The gallery is supported by twenty-six Doric columns, which form a complete semicircle around the pit; and between these columns are the boxes. The theatre was erected in 1787—89, and in 1822, the interior was wholly new-modeled, under the direction of Percier and Fontaine. The repertory of this stage consists solely of acknowledged masterpieces of French classic literature, ancient and modern, both tragedy and genteel comedy. It is very seldom that a young actor ventures to attempt both these branches, and hence the actors are generally attached to one or the other exclusively. The immortal *chef-d'œuvres* of Corneille, Racine, Voltaire, Crébillon, and Molière are here performed. Genteel comedy seems here to be in its native home. Truth, and nature, and elevated simplicity, conspire to make the performances attractive and interesting. The scenery is truly enchanting. The following performers have rendered their names classic here:—Baron, Brizard, Lekain, Clairval, Molé, Larive, Fleury, Aufresne, Dufresne, Grandmenil, Grandval, Monvel, St Phal, Preville, St Prix, Vanhove; and the actresses Lecouvreur, Gaussin, Dumesnil, Clairon, Devienne, Contat, Raucourt. The tragic department is now in the hands of Lafont, and Mad. Duchesnois and Paradol; the comic in those of Damas, Faure, Granville, Michelot, Baptiste, Michot, and Armand, in connexion with Mlle. Mars (one of the first actresses that ever graced the French stage), Mad. Bourgoing, Leverd, Hervey, Dupuis, and Mante. 3. The comic opera (called, also, the *Comédie Lyrique* and the *Théâtre Feydeau*) is one of the most fascinating of the French theatres. The principal composers for this opera have been Nicole, Méhul, Berton, Grétry, Dalayrac, Monsigny, Boyeldieu, Blangini, Solié, Dezedes, &c.; the principal writers Etienne and Hoffman, Bouilly, Nanteuil, Sedaine, Duval, Dupaty, Scribe, &c. Among the best actors are Martin, whose performances, in his own department, are inimitable; Chenard, Juliet, Ponchard, Huet, Darancourt, Castel; and Mesdames Boulanger, Ponchard, Paul, Pradher, Rigaud, &c. 4. *L'Odéon*, or *Second Théâtre Français*, in the suburb St Germain, near the Luxembourg, was built in 1791, under the superintendence of Peyre and Wailly. It was then called the *Théâtre Français*, as the first company to which that name had been given performed in it. In 1799, it was burnt, but was rebuilt, and occupied by a second company, set up to rival the first French theatre; it was then called *Théâtre de l'Odéon*. In 1818, it was again burnt, but was re-opened in 1819. The architecture of the *Odéon* is rich and beautiful, and its accommodations are excellent. The same pieces are performed as in the *Premier Théâtre Français*, and the two stages are engaged in a constant competition. The older repertory of the classic French dramatists is open to both theatres. Of the living poets, each stage has its distinct repertory. Mademoiselle George is the chief support of the *Odéon*. In the characters of Medea, Semiramis, Phædra, Merope, Agrippina, and Salome (in *Les Machabées*, by Soumet), this actress attracts the highest applause. In tragedy Joanny, Lafargue, and David, and in comedy, Faure and the younger George, are the principal actors. 5. Italian Opera. This theatre attracts the first society in the fashionable world of Paris. The interior is convenient and beautiful. The orchestra is considered perfect of the kind. The Italian opera is patronised by the government, as a school of vocal music, and the managers are careful to maintain a complete and skilful company. The public have here been delighted by the singing and acting of Mad. Fodor, Galli, Pasta, and Cinti. The best performers connected with this stage have been Dongelli, Garcia, Graciani, Pellegrini, Levasseur, Bordogui, Zuchelli.—Next to these five principal theatres come the three smaller popular theatres, frequented principally by the lower classes. 6. *Théâtre du Vaudeville*, in Chartres street. 7. *Gymnase Dramatique;* and 8, *Théâtre des Variétés*, both in the boulevards. These theatres display to perfection the exhaustless gayety of the French people; their wit, and disposition to make themselves merry at the most trifling occurrence, and to make the most of a *bon mot* or a pun. The small pieces performed in these theatres contain no deep-laid plot, and are not accompanied by any magnificent decorations. They are written merely for wit, and seem designed to increase the natural aptness of the nation to laugh at every thing. The lash of satire, indeed, is always heard, but applied for amusement, and not to gratify malice. The songs which animate the performances are of a popular cast, and are heard in every street. Nothing appears in the highest theatres which is not parodied here, and the house is frequently entertained with the tricks of harlequin. The *Gymnase* was long the most popular of these three theatres, and its income exceeded that of the first *Théâtre Française*. The *Vaudeville* is at present on the decline. A large number of poets write for these theatres. One of the most popular is Scribe. 9. *Théâtre de la Porte St Martin;* 10. *Théâtre de la Gaieté;* 11. *Ambigu Comique*, in the boulevards, represent chiefly the melo-drama, pantomime, and ballet. The two latter are designed principally for the lower ranks. 12. In 1821, the *Panorama Dramatique* was opened. No pieces are performed here in which there are more than two performers. 13. In 1817, the *Cirque Olympique* was opened by Franconi, where horses play the chief part. 14. The *Soirées de M. Comte*, likewise denominated the *Théâtre de Magie*, represents the conjuration of spirits, philosophical experiments, feats of ventriloquism, &c.

PARIS; the son of Priam, king of Troy, by Hecuba; also called *Alexander*. His mother, in the first month of her pregnancy, had dreamed that she should bring forth a torch, which would set fire to her palace. The soothsayers foretold the calamities which might be expected from the imprudence of her son, and which would end in the destruction of Troy. Priam, to prevent so great an evil, ordered his slave Archelaus to destroy the child. The slave exposed him on mount Ida, where the shepherds educated him as their own son. Some attribute the preservation of his life to the tenderness of a she-bear, who suckled him. Young Paris gave early proofs of courage and intrepidity, and his graceful countenance and manly deportment recommended him to the favour of Œnone, a nymph of Ida, whom he married. At the marriage of Peleus and Thetis, the goddess of discord (see *Eris*) threw into the assembly of the gods, who were at the nuptials, a golden apple, on which were written the words *Detur pulchriori*. Juno, Venus, and Minerva claimed the prize, and the decision was referred to Paris. The goddesses appeared before their judge without any covering or ornament, and each tried, by promises and entreaties, to influence his judgment. Juno promised him a kingdom, Minerva military glory, and Venus the fairest woman in the world for his wife. Paris adjudged the prize to Venus. This decision drew upon the judge and his family the resentment of the two other goddesses. Soon after, Priam proposed a contest among his sons and other princes, and promised to reward the conqueror with the finest bull of mount Ida, which was found in the possession of Paris, who reluctantly yielded it up. The shepherd, desirous of obtaining again this favourite animal, went to Troy, entered the lists of the combatants, and obtained the victory. Hector, enraged to see himself conquered by a stranger, pursued him closely; and Paris must have fallen a victim to his brother's resentment, had he not fled to the altar of Jupiter. Cassandra discovered that he was her brother, and Priam acknowledged Paris as his son. Paris recollected that he was to be the husband of the fairest of women. Helen was the fairest woman of the age, and Venus had promised her to him. He therefore visited Sparta, the residence of Helen, who had married Menelaus, and was received with every mark of respect; but he abused the hospitality of Menelaus, and persuaded Helen to elope with him. (See *Helen.*) Greece took up arms in the cause of Menelaus; Agamemnon was chosen general of the combined forces, and a war was begun. Paris fought with courage, and, according to some, killed Achilles with one of his arrows. The death of Paris is differently related.

PARIS, the abbé, was the son of a counsellor to the parliament, and was born at Paris in 1690. He embraced the ecclesiastical profession, and took deacon's orders, and, in the disputes occasioned by the bull *Unigenitus*, attached himself to the Jansenist party. Upon the death of his father, the abbé Paris renounced all claim to his patrimonial inheritance, in favour of a younger brother, and devoted himself to a life of poverty, living in a poor little house in the suburb of Marcel, where he passed his time in prayer and in making stockings for the poor. He died in 1727, and was buried in the churchyard of St Medard. On his death, the Jansenists used his credit to revive their sinking influence, by making his tomb the seat of their pretended miracles; and so far did the delusion gain ground, that, in 1732, it was found necessary to have the churchyard walled up. The abbé Paris wrote a Commentary on the Gospel of St Matthew; an Explanation of the nine first Chapters of the Epistle of St Paul to the Romans; on the Galatians; and an Analysis of the Epistle to the Hebrews. See *Jansenius*.

PARIS, MATTHEW, an English historian, was a Benedictine monk of the congregation of Clugny, in the monastery of St Alban's, and died in 1259. His principal work is his *Historia Major*, of which we have only remaining the annals of eight kings, from the beginning of the Conqueror's reign to the end of that of Henry III., the latter years being added, it is supposed by William Rishanger, a monk of the same monastery. It is composed with candour and impartiality. He also wrote *Historia Minor*, an abridgment of the former, which is extant in manuscript, and some other works, which are supposed to have perished.

PARIS. Plaster of. See *Gypsum.*

PARISIENNE, La, or, properly, La Marche Parisienne; a song composed by M. Casimir Delavigne, immediately after or during the French revolution of 1830. This song was, and still is, very popular, and may be compared, as to its character and the excitement which produced it, to the Marseillaise hymn. See *Marseillaise.*

PARK, Mungo; an enterprising traveller, who fell a victim to his repeated attempts to explore the interior of the African continent. His father was a farmer, and he was born near Selkirk, in Scotland, September 10, 1771. He was educated for the medical profession, and, after having studied at Edinburgh for three years, was apprenticed to a surgeon of Selkirk. On quitting this situation, he went to London, and then made a voyage to the East Indies, as assistant surgeon on board one of the company's vessels. Returning to England, he engaged in an expedition to the intertropical regions of Africa, to trace the course of the river Niger, under the patronage of the African society. He arrived on the coasts of Senegal in June, 1795, and, having made himself acquainted with the Mandingo language, commenced his journey, in the course of which he encountered great dangers; in spite of which he prosecuted his undertaking till he had reached the banks of a large river, which appeared to be the object of his researches. The state of destitution to which he had been reduced, rendered it almost impossible for him to proceed, and he therefore returned towards the coast, and arrived in England at the end of the year 1797. Of his interesting discoveries he published an account in his Travels in the Interior of Africa, in 1795, 1796 and 1797 (4to, 1799.) Mr Park then engaged in practice as a surgeon, at Peebles, in his native country, 1801. In 1805, Park was appointed by government to command a new expedition to explore the course of the Niger. His first journey had made known its easterly course (see *Niger*), but he had not been able to follow it down to its mouth. His plan now was to cross the country from the western coast, enter Bambara, construct two boats, and, embarking on the river, reach the sea. He set out from Pisania, on the Gambia, in April, with thirty-six Europeans, of whom thirty were soldiers, and the rest mechanics, and liberally provided with presents and merchandise. His impatience had led him to set out in the wet season, and of thirty-eight men who had left the coast with him, seven only survived when he reached the Niger, in August. Having finally procured permission to build a boat at Sansanding, he embarked at that place November 17. Four Europeans only survived to embark with him. Some time having elapsed without any intelligence being received of him, Isaaco, his interpreter (who had been sent back with communications from the Niger), was despatched to procure information: Isaaco succeeded in finding the person who had taken his place as interpreter, and from him received a journal containing an account of the voyage, from which it appeared, that the party was attacked by the natives at Boussa, and all killed, with the exception of one slave. Clapperton (q. v.), in his second journey, received accounts confirming this statement, and visited the spot where the travellers perished. He was also informed that the sultan of Youri had some of Park's papers, which he was willing to give up to him, if he would pay him a visit. The Landers (q. v.) also visited the place, and were shown by the sultan, or king, one of Park's books, which they describe as a nautical book, containing tables of logarithms. The Journal of Park's second Expedition was published with a memoir of his life, in 1815.

PARK OF ARTILLERY. See *Artillery.*

PARLIAMENT. The name *parliament* (French, *parlement*) was formerly given to the highest courts in France, Naples, and some other countries. They originated from the ancient diets and courts, held by the kings, which were called *parliaments*, particularly if held at extraordinary times. The barons decided legal cases, with the aid of the clergy, the magnates, and the chancellor, as was natural in times when the three branches of government were so confusedly mingled. But the kings of France soon appointed counsellors versed in the law to decide the complaints and appeals brought to their court by the inhabitants of their hereditary lands; and the same was done by the feudal princes, the dukes of Normandy, Guienne, Burgundy, Brittany, and the prince-counts of Champagne, Toulouse, Provence, &c. These counsellors were not, originally, proper judges, but merely made reports, and always followed the court. But what John of England had been obliged to promise in the Magna Charta, as early as 1215,—a permanent court confined to one place,—was, by degrees, demanded in all countries. Philip IV. (the Fair) of France, established a permanent court at Paris, in 1294, for the provinces belonging to the immediate domains of the crown, which were divided into four districts. In 1305, this institution was enlarged. In the beginning, this court held but two sessions annually, continuing, however, for weeks and months, viz. at Easter and All-Saints, but when the business of the court increased, its sessions became permanent in 1422. The vassals of the royal hereditary dominions had seats and votes in the parliament, which, at a later period, passed over to the peers of France; but the business actually fell upon the counsellors, who were lawyers. The parliament of Paris consisted, before the French revolution, of five chambers, the *grande chambre*, with ten presidents, twenty-five temporal, and twelve spiritual counsellors, three *chambres des enquêtes*, each with two presidents and twenty-three counsellors, and the *chambre des requêtes*, with two presidents, and fourteen counsellors. Criminal cases were tried in the *chambre de la Tournelle*, in which members of all the chambers sat in turn. The crown advocates (q. v.) belonged also to the parliaments, with above 500 lawyers, and a great number of subalterns. Some of the feudal principalities, even before their union with the crown, had similar tribunals; the county of Toulouse, for instance, had a parliament, Normandy her great feudal court (*scaccarium* or *echiquier*) at Rouen. After the union with the crown, parliaments were erected, by degrees, for the other provinces; at Toulouse, at Grenoble for Dauphiné, Bordeaux for Guienne, Dijon for Burgundy, Besançon for Franche Comte, Rouen, Aix for Provence, Pau for Bearn, Rennes for Brittany, Metz for the three bishoprics Metz, Toul, and Verdun, Douay for Flanders, and Nancy for Lorraine. The form of publication of the royal decrees consisted in sending them to the parliaments, which entered them in the registers, and transmitted them to the lower courts. This gave to these courts a peculiar political influence. They insisted that they had the right to make protestations to the king against decrees, and that thus they represented the estates of the realm. In early times, the court sometimes yielded. From the time of Louis XIV., however, the registering of the decree was generally obtained by the king's appearing personally in parliament, when no debate was permitted, and the registering was ordered (*lit de justice*, q. v.) Refractory parliaments were banished to Tours, Compiegne, Orleans. But the resistance of the parliaments could not always be thus overcome. The parliaments, whose members had bought their places for the sake of the dignity, showed great obstinacy, and it was sometimes necessary to yield to them. Hence Louis XV., towards the end of his reign, adopted a bolder and more fundamental measure: all the old parliaments were abolished in 1771, the sums for which the places had been bought were paid back, the new places filled by the king only, and the old members, in part, banished to small and remote towns, and, in part, imprisoned. For a long time no lawyer was willing to plead before the new courts; and when, at length, the administration of justice was recommenced, the king died, and Louis XVI. restored the old parliaments. They immediately renewed their opposition to the court, the ministers, and the superior clergy; refusing every thing, just and unjust, desired by the court. The archbishop of Sens abolished them again in 1788; but the courts established by him were acknowledged by no one. At length, the parliament declared that the assembly of the states-general alone was capable of granting what the government desired, and thus gave the signal to that revolution in which it was one of the first things overthrown. In the article *France*, division, *France before the Revolution*, we have spoken of the political influence of these bodies upon the whole organization of government. They assumed all characters, the judicial, legislative, and often executive.—We refer, for further information, to Meyer's *Esprit, Origine et Progrès des Institutions Judiciares des principaux Pays de l'Europe* (Hague, 1819.)

Parliament of Great Britain. A sketch of its constitutional power and organization is given in the article *Britain.* At present we shall only give some particulars respecting the forms of doing business in parliament. The method of making laws is much the same in both houses. In each house the act of the majority binds the whole; and this majority is declared by votes openly given; not privately, or by ballot. To bring a bill into the house of commons, if the relief sought by it is of a private nature, it is first necessary to prefer a petition, which must be presented by a member, and usually sets forth the grievance desired to be remedied. This petition (when founded on facts that may be disputed) is referred to a committee of members, who examine the matter alleged, and report to the house; and then (or otherwise upon the mere petition) leave is given to bring in the bill. In public matters, the bill is brought in upon motion made to the house, without any petition. (In the house of lords, if the bill begins there, it is, when of a private nature, referred to two of the judges, to examine and report the state of the facts alleged, to see that all necessary parties consent, and to settle all points of technical propriety.) This is read a first time, and, after a convenient interval, a second time; and, after each reading, the speaker puts the question whether it shall proceed any further. The introduction of the bill may be originally opposed, as the bill itself may, at either of the readings; and if the opposition succeeds, the bill must be dropped for that session; as it must, also, if opposed with success in any of the subsequent stages. After the second reading, it is committed, that is, referred to a committee, which is either selected by the house in matters of small importance, or else, if the bill is a matter of great or national consequence, the house resolves itself into a committee of the whole house. A committee of the whole house is composed of every member; and, to form it, the speaker quits the chair (another member being appointed chairman), and may sit and debate as a private member. In these committees, the bill is debated clause by clause, amendments made, the blanks filled up, and sometimes the bill entirely new-modelled. After it has gone through the committee, the chairman reports it to the house, with such amendments as the committee have made; and then the house re-consider the whole bill again, and the question is repeatedly put upon every clause and amendment. When the house have agreed or disagreed to the amendments of the committee, and sometimes added new amendments of their own, the bill is then ordered to be engrossed, or written in a strong, gross hand, on one or more long rolls of parchment sewed together. When this is finished, it is read a third time, and amendments are sometimes then made to it; and if a new clause be added, it is done by tacking a separate piece of parchment on the bill, which is called a *rider*. The speaker then again opens the contents, and, holding it up in his hands, puts the question whether the bill shall pass. If this be agreed to, the title is then settled. After this, one of the members is directed to carry it to the lords, and desire their concurrence, who, attended by several more, carries it to the bar of the house of peers, and there delivers it to their speaker, who comes down from his woolsack to receive it. It there passes through the same forms as in the other house (except engrossing, which is already done), and if rejected, no more notice is taken, but it passes *sub silentio*, to prevent unbecoming altercations. But if it be agreed to, the lords send a message by two masters in chancery (or, sometimes, in matters of high importance, by two of the judges,) that they have agreed to the same; and the bill remains with the lords, if they have made no amendment to it. But if any amendments are made, such amendments are sent down with the bill to receive the concurrence of the commons. If the commons disagree to the amendments, a conference usually follows between members deputed from each house, who, for the most part, settle and adjust the difference; but if both houses remain inflexible, the bill is dropped. If the commons agree to the amendments, the bill is sent back to the lords by one of the members, with a message to acquaint them therewith. The same forms are observed, *mutatis mutandis*, when the bill begins in the house of lords. But when an act of grace or pardon is passed, it is first signed by his majesty, and then read once only in each of the houses, without any new engrossing or amendment. And when both houses have done with any bill, it always is deposited in the house of peers, to wait the royal assent, except in the case of a money bill, which, after receiving the concurrence of the lords, is sent back to the house of commons. The answer to the question put by the speaker, or the chairman, in the house of commons, is *Aye*, or *No;* and, in the house of peers, *Content*, or *Not Content*.

The royal assent to bills may be given, 1. in person. When the king is to pass bills in person, he appears on his throne in the house of peers, in his royal robes, with the crown on his head, and attended by his great officers of state and heralds, and sends for the house of commons to the house of peers; the speaker carries up the money bill, or bills, in his hand; and, in delivering them, he addresses his majesty in a solemn speech, in which he seldom fails to extol the generosity and loyalty of the commons, and to tell his majesty how necessary it is to be frugal of the public money. The titles of all bills that have passed both houses are read; and the king's answer is declared by the clerk of the parliament in Norman-French. If the king consents to a public bill, the clerk usually declares, *Le roy le veut* (The king wills it so to be); if to a private bill, *Soit fait* *comme il est désiré* (Be it as it is desired). If the king refuses his assent, it is in the gentle language of *Le roy s'avisera* (The king will advise upon it.) When a money bill is passed, it is carried up and presented to the king by the speaker of the house of commons, and the royal assent is thus expressed, *Le roy remercie ses loyaux sujets, accepte leur bénévolence, et aussi le veut* (The king thanks his loyal subjects, accepts their benevolence, and wills it so to be.) In case of an act of grace, which originally proceeds from the crown, and has the royal assent in the first stage of it, the clerk of the parliament thus pronounces the gratitude of the subject; *Les prélats, seigneurs, et communs, en ce present parlement assemblées, au nom de tous vos autres sujets, remercient très humblement votre majesté, et prient à Dieu vous donner en santé bonne vie et longue* (The prelates, lords, and commons, in this present parliament assembled, in the name of all your other subjects, most humbly thank your majesty, and pray to God to grant you in health a long and happy life). 2. The king may give his assent by letters patent under his great seal signed with his hand, and notified in his absence, to both houses assembled together in the upper house, by commissioners consisting of certain peers, named in the letters. And, when the bill has received the royal assent in either of these ways, it is then, and not before, a statute or act of parliament. This statute or act is placed among the records of the kingdom; there needing no formal promulgation to give it the force of a law, as was necessary by the civil law with regard to the emperor's edicts; because every man in England is, in judgment of law, party to the making of an act of parliament, being present thereat by his representatives. However, copies thereof are usually printed at the king's press, for the information of the whole land. An act of parliament cannot be altered, amended, dispensed with, suspended, or repealed, but in the same forms, and by the same authority of parliament; for it is a maxim in law, that it requires the same strength to dissolve as to create an obligation. The forms of doing business in the congress of the United States of America are substantially the same as in the British parliament.

PARMA; a duchy in Upper Italy, bounded by the Milanese on the north and west, by the Modenese on the east, and the Apennines on the south, and composed of the duchies of Parma, Piacenza, and Guastalla; 2200 square miles; 419,201 inhabitants. It is hilly, but fertile, and highly cultivated, yielding corn, wine (*vino santo*), silk, oil, hemp. The breeding of sheep is also much attended to. The principal manufacture is that of silk. The capital, Parma, on a river of the same name, is a fortified place, with 35,000 inhabitants. The streets are for the most part handsome, and the houses well built. The churches contain the masterpieces of Correggio, Lanfranco, and Mazzuoli (surnamed *Il Parmegiano*,) who were born here. The cathedral contains the celebrated fresco of Correggio, the Assumption of the Virgin Mary, which is much injured, and the church of the Holy Sepulchre, the *Madonna della Scudella* of the same master. The church of the *Madonna della Steccata* is worth visiting for the monuments of the Farnese, and the capuchin monastery for its paintings. Among the other buildings and institutions of the city, are the ducal palace, with a gallery of paintings and works of art, the finest pieces of which, however, were carried to Naples in 1734; an excellent library; an academy of belles-lettres and the fine arts, founded in 1765; the university, with 400 students; the opera house, built in 1618, which is the largest in Europe; the theatre, &c. The Bodoni press, to which belong MSS. in 200 languages, is one of the first in Europe.

Parma, with Piacenza, anciently belonged to Cisalpine Gaul, and, at a later period, to the confederacy of Lombard cities. The houses of Este and Visconti were in possession of Parma for some time. Louis XII. conquered both cities; and, after the dissolution of the league of Cambray (1508), pope Julius II. reduced them. Pope Paul III., of the house of Farnese (q. v.), raised Parma, with Piacenza, to a duchy, and conferred it on his natural son. On the extinction of the male Farnese line, don Carlos, son of Philip V. of Spain and Elizabeth Farnese, received the duchies of Parma and Piacenza, which, on his accession to the throne of the Two Sicilies, were ceded to the emperor by way of indemnification. By the peace of Aix-la-Chapelle (1748), Austria ceded Parma, Piacenza, and Guastalla to the Spanish Infant don Philip, whose son Ferdinand preserved his estates; but, on his death in 1802, France took possession of them, his son being created king of Etruria. In 1805, Parma, Piacenza, and Guastalla were incorporated with the French empire, and, by the peace of Paris (1814) and the decree of the congress of Vienna (1815), were transferred to Maria Louisa, empress of France and archduchess of Austria. Spain protested against this arrangement, and claimed them for Maria Louisa, widow of the king of Etruria (duchess of Lucca), whose husband had relinquished them only on condition of receiving Etruria. In 1817, a new convention was therefore concluded, by which it was stipulated, that, on the death of the ex-empress, they should pass (with the exception of some districts on the left bank of the Po, and the right of maintaining a garrison in Piacenza, reserved to Austria) to the duchess of Lucca and her male posterity. Lucca was then to pass to the grand duke of Tuscany, who, in return, was to cede his estates in Bohemia to the duke of Reichstadt, son of Napoleon.

PARMEGIANO, or PARMEGIANINO. See *Mazzola.*

PARMENIDES; a Greek philosopher of Elea, who developed more fully the speculative views of Xenophanes, his friend and instructer, and is therefore the most celebrated of the Eleatic school. He flourished about the 79th Olympiad, and seems to have gone to Athens in the 80th, or B. C. 470. Here Socrates, then a young man, probably saw him. He was highly esteemed by the ancients, not merely as a speculative philosopher, but as the wise lawgiver of Elea. He accurately distinguished between the knowledge gained from reason and that obtained from the senses. The pure existence from the notion of which he proceeded, is known only by reason; it is one, unchangeable and eternal, limited only by itself, and consequently filling space. Change and motion, on the contrary, are only appearances. He also proposed a theory on sensual phenomena. In this theory, he adopted heat and light, or fire, and cold and darkness, or the earth, as opposite principles. Fragments of his philosophical poem on nature are found in Stephens, also collected with a translation by Fulleborn (Zullichau, 1795), and in Brandis's *Commentationes Eleaticæ*, p. I. (Altona, 1813).

PARMESAN CHEESE. See *Lodi.*

PARNASSUS (now *Liakura*); a mountain in the ancient Phocis (now *Roumili*), at the foot of which lay Delphi (q. v.), with the fountain of Castalia, in whose crystal waters the priestess and those who consulted her were required to purify themselves. Parnassus was sacred to Apollo and the Muses. It has two peaks, of which the southern was called *Hyampea*, the north-western *Tithorea*. The highest summit was called *Lyconeus*; on it the Bacchantes celebrated their orgies.

PARNELL, THOMAS, an English poet, was born in Dublin, in 1679. He was educated at Trinity college, and, taking orders in 1705, was presented to the archdeaconry of Clogher. He was connected with Addison, Congreve, Steele, and other whigs in power; but, towards the latter part of queen Anne's reign, when the tories became triumphant, he deserted his former friends, and linked himself with Swift, Pope, Gay, and Arbuthnot. He afforded Pope some assistance in his translation of Homer, and wrote the Life prefixed to it; but, being a very bad prose writer, Pope had a great deal of trouble in correcting it. He contributed to the Origin of the Sciences, and wrote the Life of Zoilus, as a satire on Dennis and Theobald, with whom the Scriblerus club had long been at variance. By Swift's recommendation, he obtained a prebend and the valuable living of Finglass, but finally contracted habits of intemperance, which shortened his life. He died in 1717. A collection of his poems was published by Pope after his death. They are pleasing, and possess fancy, ease, sprightliness, and melody of versification; while their sentiments are elegant, and morality pure. Another posthumous volume was published at Dublin, in 1758.

PARNY, Chevalier Evarist de, called the *French Tibullus*, was born, in the Isle of France, in 1742, went to France in 1753, studied at Paris and Rennes, was for some time seized with a religious zeal, and wished to become a Trappist, but finally entered the military service. He then returned to the Isle of France, where a disappointed passion for a young girl, known to us under the name of *Eléonore*, made him a poet. Grace and tenderness of sentiment, depth of feeling, richness of imagination, united with harmony, and ease of versification, were the characteristics of his elegies, which placed him in the first rank of classical French poets. His *Epître aux Insurgents de Boston* (Epistle to the Boston Rebels), published in 1777, deprived him of any hopes of ministerial favour. Besides his elegies, he also wrote *La Guerre des Dieux*, *Le Portefeuille volé*, and *Les Rosecroix*. The first of these poems—an attempt to throw ridicule on Christianity—was an imitation of Voltaire's *Pucelle*. In the second work above mentioned, *Les Déguisements de Venus* is distinguished for grace and freshness of description. Several other works of Parny, which it is unnecessary to mention, were violations of the rules of decency and good morals, and he was in consequence excluded from the institute on its first organization. In 1808, however, he was admitted into that body. His death took place in December, 1814.

PARODY. The Greeks gave this name to humorous poems, or to parts of them, in which whole passages or single expressions were taken from serious compositions. Athenæus has preserved a poem of this kind by Matron, and calls Hipponax the inventor; but, according to Pristotle, Hegemon of Thasus invented them. Aristophanes is full of such parodies. By *parody*, at present, is generally meant a composition in which a serious composition has been transformed by changing its subject into another, either serious or comic, most commonly the latter; hence a *parody*, in its narrower sense, is the same as a *travesty*. In a still narrower sense, *parody* means a poem in which merely the chief personages and ideas are changed, but the subordinate parts and the whole tone are preserved, as in the Battle of the Frogs and Mice. Contrast is the chief instrument of parody, and as mere contrast, by exciting surprise, often produces, for a time, the effect of wit, poor parodies often please for a moment by boldness in applying the gravest expressions to the most comic subjects, or the reverse.

PAROLE; a term signifying any thing done verbally, or by word of mouth, in contradistinction to what is written; thus an agreement may be by parole. Evidence, also, may be divided into *parole* evidence and *written* evidence. See *Evidence*.

In military affairs, a promise given by a prisoner of war, when he has leave to depart from custody, that he will return at the time appointed unless discharged. It is also used for a word given out every day in orders by a commanding officer, in a camp or garrison, by which friends may be distinguished from enemies.

PARONOMASIA; a rhetorical figure by which different ideas are expressed by words of similar sound or the same extraction, in order to make the difference more striking; for instance:—

Not *friends*, but *fiends*, are here.

PAROQUET. See *Parrot*.

PAROS; an island of the Grecian Archipelago, in the Central Cyclades, to the west of Naxos, with a population of 2000 Greeks. The island is mountainous, but fertile and well cultivated; square miles 100. Paros was celebrated, in ancient times, for its marble, which was remarkable for its whiteness and firmness, and withstood the action of the weather better than any other sort. (See *Marble*.) The famous Parian chronicle was taken hence in 1627. (See *Arundelian Marbles*.) Many remains of ancient buildings are still found in the island. Near it lies the island of *Antiparos*, with 500 inhabitants. It was the birth-place of Phidias and Praxiteles, and contains a celebrated grotto or cave, full of fine stalactites.

PAROXYSM OF A FEVER. See *Fever*.

PARR, Catharine. See *Catharine Parr*.

PARR, Samuel, a learned divine and eminent critic, was the son of an apothecary of Harrow, in Middlesex, where he was born in 1747. At the age of six, he was admitted into the celebrated school of his native place, which he headed in his fourteenth year. He entered Emmanuel college, Cambridge; but, unable to support the expense, accepted the situation of usher at Harrow. In 1769, he entered into deacon's orders, and, in 1771, was created A.M. at Cambridge, by royal mandate, for the purpose of qualifying him to succeed doctor Sumner, in the mastership of Harrow school; but, not succeeding, he opened a school at Stanmore, and in 1776, became master of the grammar school at Colchester, whence, in 1778, he removed to take charge of that of Norwich. In 1783, he obtained the perpetual curacy of Hatton, in Warwickshire, where he afterwards resided, and was presented by bishop Lowth to a prebend in the cathedral of St Paul. In 1802, Sir Francis Burdett presented him to the valuable living of Graffnam, in the county of Huntingdon. Doctor Parr commenced his career as an author in 1760, by the publication of Two Sermons on Education; and, in the following year, printed a Discourse on the late Fast, which, in consequence of its allusion to the contest with America, excited great attention. In 1787, he assisted his friend Henry Homer in a new edition of the learned Scotsman William Bellenden (Bellendenus). This republication he inscribed to Messrs Fox and Burke, and lord North, the character of whose oratory he drew with uncommon elegance, force, and felicity. Making use of the same opportunity to assail that of their political opponents, he put an end to all hopes of preferment from government, on which account a subscription was made by the whig club, which secured him an annuity of £300 per annum. In 1789, he republished the Tracts by Warburton and a Warburtonian, to which he prefixed some severe strictures on bishop Hurd. In 1790, he engaged in the controversy on the real authorship of White's Bampton Lectures, from which it appeared that his own share in them was by no means inconsiderable. In 1791, his residence was in danger of destruction from the Birmingham rioters, in consequence of his intimacy with doctor Priestley. On this occasion, he published a tract, entitled a Letter from Irenopolis to the Inhabitants of Eleutheropolis. On Easter-Tuesday, 1800, he preached his celebrated Spital sermon, in which he attacked the social doctrine of Godwin's Political Justice. This discourse he soon after published, with notes. On the death of Mr Fox appeared his Characters of the late Right Honourable Charles James Fox, selected, and, in part, written, by Philopatris Varvicensis. In 1819, he reprinted Speeches by Roger Long and John Taylor, of Cambridge, with a critical Essay, and Memoirs of the Authors, and composed a pamphlet, which appeared after his death, defending bishop Halifax from the charge of having become a convert to the church of Rome in his last sickness. His death took place at Hatton, March 26, 1825, in his seventy-ninth year. In curious and elegant classical knowledge, he seems to have been at the head of the English scholars of his day. His prodigious memory and extent of research rendered him very powerful in conversation. His Works, with a Memoir, by Johnson, appeared in 8 vols., 8vo (London, 1828); and Memoirs of Doctor Parr, &c., by Field (2 vols., 8vo, 1828).

PARRAKEET, or PAROQUET. See *Parrot.*

PARRHASIUS, a Greek painter, born at Ephesus, flourished about 420 B. C. He was a contemporary and rival of Zeuxis. According to Pliny, he was the first who introduced proportion into painting, lively expression and grace into the countenance and attitude, and he excelled all other painters in design. Several of his pictures are mentioned by ancient authors, but none of them has been preserved. His success rendered him arrogant; according to Athenæus, he clothed himself in purple, wore a gold wreath on his head, and pretended to be descended from Apollo, one of whose surnames was *Parrhasius.* See *Painting.*

PARROT (*psittacus*). This splendid genus includes about 170 species. The luxuriant tracts of the torrid zone seem to be the favourite residence of these noisy, numerous, and richly-plumaged tribes. They are not, however, as was supposed by Buffon, confined to that zone, as later discoveries have shown that they are found in America as far south as the straits of Magellan, and on the shores of Van Diemen's Land; and one species in the United States of America is resident as far north as 42°. Bill hooked; upper mandible movable, and, for the most part, covered with a case; nostrils rounded, basal; tongue, in most of the species, fleshy, obtuse, and entire; feet formed for climbing. They assist themselves in climbing with the bill, associate in pairs or flocks, feed on the seeds and fruits of various plants, often attain to a great age, and, by means of their obtuse tongue, and the conformation of their larynx, may be taught to imitate the human speech. They are of a great variety of sizes, from that of the domestic fowl to that of a sparrow. The macaw has been described in a separate article. The pavouane parrot (*P. Guianensis*) is found in the Antilles and Guiana, where it assembles in large flocks, and does great injury to the coffee plantations. The ring paroquet (*P. Alexandri*), which is remarkable for its docility and imitative powers, seems to have been the only species known to the earlier Greeks and Romans, having been brought from Ceylon after the expedition of Alexander. They afterwards obtained other species from Africa. Common gray parrot (*P. erithacus*), about the size of a small pigeon, is remarkable for its loquacity, docility, and distinctness of articulation. It is common in many parts of Africa. Individuals of this species are known to have lived about 100 years. The common green parrot (*P. Amazonius*, Shaw), of which the varieties are very numerous, is a native of South America. The Guinea parrot (*P. pullarius*) is a highly beautiful species, about five inches in length, and is found in the East Indies and Africa. They easily imitate other birds, but articulate with difficulty. The only species found native in the United States is the Carolina or Illinois parrot (*P. Carolinensis*), which is resident from the gulf of Mexico to the neighbourhood of lake Michigan, and on the east of the Alleghanies to Maryland, and occasionally strays into New York. Their favourite food is the seeds of the cockle-bur, which grows in great abundance along the shores of the Mississippi and the Ohio. They are seen in large flocks, screaming round the salt licks, being, like the pigeons, fond of the salt water. They are very sociable in their dispositions, extremely fond of each other, and showing the greatest grief for the loss of their companions. The plumage is very beautiful, the general colour being a bright-yellowish, silky green, with light-blue reflections. The tail is long and cuneiform. These birds are about 13 inches long, and 21 across the wings when extended.

PARSEES. See *Guebers.*

PARSLEY (*apium petroselinum*); a well-known garden vegetable, used for communicating an aromatic and agreeable flavour to soups and other dishes. The root is elongated and whitish; the stem upright, three or four feet high, striated and branching; the leaves doubly pinnate, with the leaflets of the inferior part of the stem oval, wedge-shaped and incised, and the superior ones linear. the flowers are small, yellowish white. It belongs to the natural family *umbelliferæ*, and is supposed to have been brought originally from Sardinia, though now common throughout the south of Europe. All domestic quadrupeds are fond of the leaves, but they are a dangerous poison to poultry and other birds.

Parsley is sown from March to August, and the leaves may be cut several times during the summer, provided that care is taken to water the plants in times of drought. As the root is biennial, the flowers and seeds do not appear until the second season; and, if cut before flowering, the duration of the plant is frequently prolonged another season.

Celery is a second species of *apium*, and, in its wild state, is a small, acrid, and noxious plant, but, from cultivation, has become one of our most valuable salads.

PARSNEP (*pastinaca sativa*); a well-known culinary vegetable, a native of the south of Europe. The root is biennial and fleshy; the stem herbaceous, upright, striated, rigid, and branching; the leaves pinnate, alternate, and sheathing at the base, composed of oval, slightly lobed, and incised leaflets. The flowers are small, yellow, and are disposed in umbels, as is usual with the *umbelliferæ*. In the wild plant, the leaves and stem are hairy; but, when cultivated, they become smooth, and the root is larger and more succulent.

Parsneps are sweetish, and slightly aromatic to the taste. Besides their use for the table, they are often cultivated on an extensive scale as fodder for cattle. The milk of cows is improved in quality, and the quantity is increased, by their use, and, besides, yields butter of a fine saffron yellow, and excellent flavour. Indeed, all domestic quadrupeds are extremely fond of them. As an article of food for man, they are agreeable to most palates, and are considered wholesome, and highly nutritious. They may remain in the ground all winter, as they are not liable to injury from frosts, and may be taken up as required. They are sown in the autumn, or more frequently in the spring, and the roots are in perfection about the end of September

From the *pastinaca opoponax*, a native of the countries about the Mediterranean, is obtained a gum-resin, which is famous in the East for curing all kinds of maladies.

PARSONS, Theophilus, a distinguished chief-justice of Massachusetts, was born in February, 1750, in Byefield, Massachusetts. His father was minister of that parish. His youth was assiduously devoted to the study of the Latin and Greek languages, logic, metaphysics, and the mathematical sciences. He studied law in Falmouth, now Portland, and kept for some time the grammar school in that town. He practised law there a few years; but, in consequence of the destruction of the town by the British, he retired to the house of his father, in Newbury. In about a year from this time, he opened his office in Newburyport. Never was fame more early or more just than that of Parsons as a lawyer. His professional services were generally sought for, not merely in his native county, but in the neighbouring state of New Hampshire and in Boston. After thirty-five years' extensive practice, he succeeded chief-justice Dana in the supreme judicial court of Massachusetts in 1806. The regularity of trials, and the promptness and correctness of decisions throughout the commonwealth, soon attested the beneficial effects of his labours. The first six volumes of the reports of the court in which he presided are a monument of his accurate juridical reasonings, and his deep and extensive knowledge of the common law, and the constitutions and statutes, of his country.—As regards his political character, although unwilling to take so great a share in public councils as his townsmen and the people of his county desired, yet, on great occasions, he gave his time and talents to the state. He died at Boston, Oct. 30, 1813.

PARTHENON. See *Athens*.

PARTHENOPE. See *Naples*.

PARTHIA. By Parthia, in the widest sense, we understand the Parthian empire, lying between the Euphrates, the Oxus, the Caspian, and Arabian seas. In the narrowest sense, Parthia (*Parthyene*) is the small country formerly inhabited by the Parthians, bounded by Hyrcania, Aria, Carmania, and Media, and encircled by mountains. It was situated in the northwestern part of the modern Chorasan, where Kurti and Thus now lie. In a middle sense, Parthia included the northern provinces of Persia, Hyrcania Felix (now *Masenderan*, *Jerjan*, and *Corcan*), the small Parthyene itself, celebrated for its breed of horses, Aria (a part of Chorasan), Margiana (now *Forg* and *Marushak* in East Chorasan), Bactriana (or the southern part of Bucharia), the regions about the Paropamisus (the district around Candahar), Drangiana (*Segistan*), Arachosia and Sogdiana (the northern division of Great Bucharia). The Parthians (fugitives) were known in the earliest times as a nation of barbarians. They were of Scythian origin. Polygamy was common among them. They fought only on horseback, were celebrated for their skill in archery, and were particularly formidable in flight. They were subject successively to the Persians, Macedonians, and Syrians. Under the latter they remained till the time of Antiochus II. At that period, Arsaces (Aschak) took up arms, expelled the Syrians, and extended his conquests over the neighbouring countries. His successors continued his career of victory. This was the origin of the Parthian empire, governed by the Arsacidæ (Aschcanians or Aschakians), from B. C. 156. Ctesiphon, the capital, on the eastern bank of the Tigris, was built by Vardanus. They carried on war with the Romans with various fortune, but the Romans never gained any permanent advantage over them. Crassus was slain in a battle against them, B. C. 53, in which he was defeated with great loss. Trajan, indeed, conquered a part of Parthia; but this conquest was lost partly by himself and partly by Adrian. In the year A. D. 214, Artaxerxes, a Persian, son of Sassan, excited a rebellion, drove the Arsacidæ from the throne, and, in 229, subjected all Central Asia, and founded the line of the Sassanides. See *Persia*.

PARTICIPLE; that part of a verb which has the nature of the adjective, with this addition,—tha it expresses also the relations of time, the present, past, &c. This double nature gave the participle its name, *participating* as it does of the characters of two parts of speech. Many languages have active and passive participles, past, present, and future. The beauty of a language, its force and expressiveness, depend greatly upon the perfection of its participles. The modern European languages are very deficient in this respect, compared with the two classical languages.

PARTICLES (*particulæ*); such parts of speech as are incapable of any inflection, as, for instance, the preposition, conjunction, &c. These words are generally short, consisting mostly of original sounds, and the name *particles* has been given to them from this circumstance; but, as the external dimension of a word is a very unphilosophical and insufficient ground of classification, many grammarians have dropped this name, and divided all parts of speech into declinable and indeclinable.

PARTIDAS, Las. See *Alphonso X.*, and *Louisiana, Code of.*

PARTITION is a dividing of lands descended by the common law, or custom, among coheirs or parceners, where there are two at the least.

PARTNERSHIP. A partnership is an agreement between two or more to share in the profit and loss of the use and application of their capital, labour, and skill, in some lawful business, whether one supplies capital, and another skill and labour, or each contributes both labour and capital. The benefits of a union of the means and advantages of different persons for the conduct of a branch of business, in many instances, are too obvious and common to need illustration. A partnership is not constituted merely by an interest of different parties in the same thing, but it depends on a participation of profits and joint liability to loss. And yet there are some exceptions to this rule, for it has been held that seamen shipping on shares in a fishing voyage are not copartners with the owners. And so, where a certain share or commission is allowed to a clerk, or agent, depending on the success of the business or amount of profits, in addition to his other compensation, it has been held, in many cases, not to make him a copartner. It is difficult to point out the criterion by which cases of this description are distinguished from those of copartnership; and some of them look more like an exception of cases which strictly come within the definition of copartnership. A question has been made whether joint owners of a ship are copartners, and the general doctrine is that they are not so; and yet it is generally held that each one is liable for the whole amount of repairs and expenditures in the navigation of the ship; but still the ownership is not joint, for, in case of the decease of one, the property in the whole ship does not survive to the others, as would be the case if it were partnership property, but the property is held in common, each part owner having a distinct title to his share; and one part owner cannot, merely as such, convey a title to the whole ship, or to any share except his own. As to the share of each partner in the profits, or his liability for losses, if there is no agreement on this subject, all the partners stand upon an equal footing. As to the objects of copartnerships, they are not confined to commerce, though most frequent in that branch of industry, but may embrace manufacturing, the carrying on of any mechanic art, agriculture, the practice of law, or of medicine, and, in short, almost every lawful branch of business.

Copartnership is more usually formed by a written agreement; and by some codes, and in regard to certain copartnerships, formal stipulations are required by law in order to constitute a copartnership. This is not a general rule, however, for, in many branches of business, parties may agree orally on a participation in profit and loss. These associations are divided into different classes, distinguished by their objects, and the extent of the liability of each partner. The Roman law allowed of general copartnerships, extending the community of property and joint profit and loss not only to the business pursued, but also to all acquisitions by either party, whether by legacy, inheritance, gift, or as the fruits of industry. By that law, and so by the laws of France, Spain, Louisiana, and other codes derived from the Roman law, a man and his wife may be copartners; and in making the marriage contract, the kind and extent of copartnership is agreed upon, the form of the stipulation for this purpose being particularly pointed out by the French code. It was between the parties to the marriage contract that the general copartnerships above mentioned were most frequently formed. In this respect, however, the Roman law, and those codes derived principally from it, leave the parties at liberty to agree upon a universal copartnership or a limited one, or a separate property.

Copartnerships are usually confined to the prosecution of a particular branch of business, and it very often happens that each copartner is concerned in other branches. The term *general copartnership* is also applied to one formed for trade generally, or business generally, without limitations; but where the joint interest extends only to a particular concern, as, for instance, the freighting of a ship, it is called a *special copartnership.* And so a partnership is called *special* when the parties enter into stipulations modifying and restraining the powers and rights of the members, instead of leaving them to the operation of the laws generally applicable to such associations; and this is the usual meaning of *special copartnership.* Another description is that of *limited* copartnerships, in which one or more partners put in a certain amount of capital, which is liable for the contracts of the firm; but beyond this the party or parties are not liable. This sort of partnership is particularly provided for in the French code, and is not unfrequent in France. It is a very useful provision of the law that allows of such associations, for it enables persons of fortune, and retired from business, to put a part of their capital at risk in trade, without risking their whole property; and it accordingly operates very favourably upon the enterprise of the community; for a young man who has only his talents and industry to put into a concern, can thus more easily obtain the capital necessary to give his activity and enterprise scope, and every community ought to open all practicable channels for the intellectual and physical exertions of its members. The condition of such a limited copartnership is, that the name of the person whose liability is thus limited must be used in the firm, and particular provisions are made as to paying in the amount of capital stipulated; and another suitable provision in such case is the provision for some registry by which it may appear to those who wish to make the inquiry what amount such partner pays in. Some partnerships are *secret;* that is, some one agrees, upon certain terms, to share profits with the ostensible partners, without any notice to the public of his being a member of the firm. Each partner has a joint interest in the whole personal property, and, unless the articles stipulate otherwise, may transfer it. Each partner may also bind the whole firm by his contract made in the course of the business of the firm, unless it be otherwise agreed between them. And even when it is otherwise agreed, still, if a party with whom a partner contracts has a legal right, from the manner in which the joint affairs are managed, to presume that a partner is authorized to contract for and bind his copartners in regard to the subject of any contract, the firm will be bound by such contract. But if the party contracted with has notice that, by the articles of copartnership, a partner has not authority to make a contract, the company will not be bound by it. So if a partner contracts, in the partnership name, in a matter which the party contracted with knows is not within the business of the firm,—as if he makes a negotiable note in the name of the firm for his own separate debt,—the contract will not bind the firm to the party thus contracted with; but still, if this contract, being transferable in its nature, and holding out on the face of it the responsibility of the whole firm, is negotiated to those who have no notice that the paper was made for the private accommodation of the partner who signed the partnership name, the company will be bound in respect to such assignee; that is, the firm having given notice to the world that they are copartners in a certain branch of business, every one has a right to presume that all acts done by each of them in regard to it are authorized by the terms of their contract or the circumstances of the case, unless he has notice to the contrary. But certain acts are not authorized by the general powers of copartners, and those no one partner can be presumed to have power to do; as for instance, one partner is not, merely as such, authorized to make a deed in the name of the other, or to act as his attorney; and he cannot, accordingly, convey land belonging to the members of the company; for, though it may have been acquired and paid for with the property of the firm, yet when acquired it belongs to the members in common, if the title be in them all, and each member can himself convey only his share; and in order to the conveyance of that of another, he must be specially empowered. But a partner may release a debt due to the firm, if it be done fairly, and without collusion between him and the debtor. It has been held, however, that one partner cannot by deed submit a question to arbitration.

A partnership may be dissolved by its own limitation, the death, bankruptcy, or insanity of a member, or by the breaking out of a war between the countries to which the members belong. A question is also made whether a member may dissolve the copartnership voluntarily before the time for which it was formed expires; and the opinion seems to be that he may do so by giving sufficient notice to this effect; and this seems to be necessarily incident to new associations. For though he would, in such case, be answerable to his copartners for the breach of his agreement, yet it would be exceedingly inconvenient if a partner were irrevocably bound to give his copartners the right of his credit, and of disposing of his property after all his confidence in them had ceased. In case of mismanagement by any partner having the charge of the partnership effects, so that the other partners are liable to be materially injured, they may make application to a court of chancery to appoint a receiver to take charge of the concerns of the company, and wind up its affairs, in case the partnership has already been dissolved, or in case there appears to be sufficient reason to dissolve it. But where there is no ground for such application to a court of chancery, and the company is dissolved by the death of one partner, the joint property will survive to the other partner, who may dispose of it, and collect and pay the debts of the concern, and will be liable to account to the personal representatives of the deceased partner for his proportion of the surplus property. In case of the decease of a partner, his personal representatives do not become copartners with the surviving partners, but the affairs of the concern must be settled with reference to the time of the death of the deceased partner.

PASA, or FESA (anciently *Pasargada*); a town in Persia, in Farsistan; sixty-eight miles south-east of Schiras, 235 south-south-east of Ispahan; lon. 53° 40′ E.; lat. 29° 10′ N. This was formerly the burial-place of the Persian monarchs, and a royal city.

PASCAGOULA; a river of Mississippi, which runs south into the gulf of Mexico, thirty-eight miles west of Mobile bay; lon. 88° 30′ W. It is navigable for vessels drawing six feet of water about fifty miles. Length about 300 miles.

PASCAL, Blaise, born at Clermont, in Auvergne, in 1623, was the only son of the president of the *cour des aides*, who educated him with great care, and instructed him himself. In early youth, he gave proofs of extraordinary talents, and showed a decided inclination for geometry. His hours of relaxation were employed in the study of mathematics. His father surprised him engaged in studying Euclid, which he understood without any assistance; and, in his sixteenth year, the young Pascal wrote a treatise on conic sections, displaying great acuteness, but which, notwithstanding the entreaties of his friends, he would not consent to publish. His studies in the languages, logic, physics, and philosophy, were pursued with such assiduity, that his health was irrecoverably gone in his eighteenth year. In the course of the next year, he invented the celebrated calculating machine, the mechanism of which it cost him much pains to render intelligible to the workmen, at a time when he was hardly free from suffering for a day. In his twenty-third year, he made several discoveries concerning the Torricellian vacuum. Before he was twenty-four years old, the reading of some religious works had brought him to the conviction that a Christian must love God only: he therefore laid aside all profane studies, and became more and more deeply rooted in his ascetic notions, which, however, had been familiar to his childhood. Pascal's piety produced a great effect on his whole family. His father became his pupil, and his sister a nun in the Port Royal. Pascal, although constantly sick, continued to practise his penances with additional rigour. By the direction of his physician, he went into society; but his sister soon induced him to renounce all intercourse with the world, and to give up all superfluities, even at the expense of his health. In this manner he lived from his thirtieth year till his death. After spending some time in a monastery, he retired to an estate in the country, denied himself every indulgence, made his own bed, ate in the kitchen, and allowed himself to be served only when it was indispensably necessary. He spent his time in prayer, and in reading the Scriptures (which he thus learned by heart), and commentaries on them. His disease, meanwhile, became aggravated, and he died in 1662, at the age of thirty-nine. Pascal had a powerful mind. He had conceived a work on the Christian religion, the object of which was to show its excellence, from a consideration of human nature as well as on historical grounds. The fragments, which were written down during the last four years of his life, and published under the title of *Pensées sur la Religion* (Amsterdam, 1667), show the hand of a master. His *Provinciales, ou Lettres écrites par Louis de Montalte à un Provincial de ses Amis*, is a most bitter satire upon the lax morality of the Jesuits, whose influence was more affected by it than by the most violent attacks of their declared enemies. These letters are esteemed a model of the didactic epistolary style in French literature. Pascal's *Œuvres* appeared at the Hague, in 1779, in 5 vols. Raimond's *Eloge de Pascal* (1816) contains an account of his life.

PASCATAQUA. See *Piscataqua*.

PASIGRAPHY (from *πᾶσα*, universal, *γραφη*, writing). A universal written or spoken language, that is, a language easily understood by all nations, has never yet been formed. Leibnitz seems to have first conceived the idea; at least, he laboured a good deal in attempting to execute it. He was followed by Wilkins in England, (1668), and in Germany by Berger, Plan of a Universal Written and Spoken Language (in German, Berlin, 1779); Wolke, Means of rendering a Universal Language practicable (in German, 1797); Sicard, the celebrated instructer of the deaf and dumb (in 1798); Nather (in 1805); Bürja, *Pasilalie* (1808); J. M. Schmidt, of Dillingen, Attempts at Pasigraphy (in German, Vienna, (1815); and Stethy, *Lingua universalis* (Vienna, 1825). The academy of sciences at Copenhagen, in 1811, offered a prize for the best plan of such a language, and its accomplishment. "The idea of a universal language," says Wagner, in his Philosophy of Education, "is founded upon the fact, that the essence of every language consists in its internal organization, for which a common expression must be possible, since this internal organization of a language can be only the expression of the various relations of ideas, and these relations, again, only the expression of the real relations of things. If, now, a general representation can be found for these relations, a universal grammar is obtained; and, if this can be communicated in common characters, intelligible by every one, we have a complete pasigraphy."—See Vater's *Pasigraphy and Anti-Pasigraphy* (in German, Weissenfels, 1795); Niethammer, *Ueber Pasigraphie und Ideographie* (Nuremberg, 1808); and Riem, *On a Written Language and Pasigraphy* (in German, 1809). A universal spoken language (*pasilaly*) is also a desideratum. See *Language*.

PASIPHAE; in heathen mythology, daughter of Sol and Perseis, and wife of Minos, king of Crete, to whom she bore Deucalion, Glaucus, Ariadne, and Phædra. Blinded by Neptune, who wished to punish Minos for not having sacrificed a bull to him, or, according to others, by Venus, who had sworn vengeance against the whole family of Sol because he had betrayed her intrigue with Mars, she was inflamed with an unnatural love for the bull. Her desires were gratified by means of the wooden animal made by the ingenious Dædalus, and the Minotaur was the fruit.

PASQUIL; derived from *Pasquino*. (q. v.)

PASQUINO, Pasquinade. Pasquino was a cobbler, who lived, above 300 years ago, in Rome, and was so much celebrated for his caustic satire and wit that his shop was much visited by persons desirous to hear him. Soon after his death, a beautiful but mutilated statue (according to some, that of Menelaus) was dug up not far from Pasquino's shop, and put up in a corner of the Ursini palace. The people unanimously called the statue *Pasquino*, and satirical placards were attached to it—put, as it were, into the mouth of the revived Pasquino. Another statue, called *Marforio* (q. v.), supposed to be a corruption of *Martis forum*, stood opposite Pasquino; and questions were generally attached during the night to Marforio, which were answered by Pasquino. For instance, pope Sixtus V. had taxed several articles of food, and on Sunday Pasquino appeared with a wet shirt, as if to dry it in the sun. Marforio inquired why he did not wait till the next day to dry his shirt; to which Pasquino replied, "I am afraid to lose any time, for to-morrow I may have to pay a tax for sunshine." These two statues now lie in the court of the capitol. The Italian words *pasquinata* and *pasquillo* have been adopted in several other languages, and in some, as French and German, are even used in legal language for libel.

PASS, or PASSADE, in fencing; an advance or leap forward upon an enemy. Of these there are several kinds, as passes within, above, beneath, to the right, the left, and passes under the line, &c.

PASSAGE, Birds of. See *Migration*, and *Ornithology*.

PASSAIC FALLS. See *Cataract*.

PASSAMAQUODDY; a bay which forms a part of the boundary between Maine and New Brunswick. It is about twelve miles from east to west, and six from north to south. It contains a number of islands, of which the principal are Campo Bello, Deer, Moose, Dudley, and Frederick. The Passamaquoddy or St Croix river flows into this bay. See *Croix, St.*

PASSANT, in heraldry; a term applied to a lion, or other animal, in a shield, appearing to walk leisurely.

PASSAROWITZ, Peace of; concluded July 21, 1718, by Venice and the emperor Charles VI. with the Porte, at Passarowitz, a small town in Servia, at the confluence of the Morawa and the Danube, under the mediation of Britain and Holland. It terminated the war begun in 1714 by the Porte for the conquest of the Morea, in which the Turks succeeded in 1715. The emperor, as guarantee of the peace of Carlowitz (q. v.), took up arms for Venice in 1716. Eugene (q. v.) was victorious at Peterwardein, August 15th, 1716, and at Belgrade, August 16, 1717; after which the Porte determined to conclude a peace on the principle of *uti possidetis*, by which it retained the Morea, without a formal cession from Venice. Austria received Belgrade, with Servia, the bannat of Temeswar, Walachia to the Alute, and part of Croatia. See *Belgrade*.

PASSAU; capital of the Bavarian circle of the Lower Danube, in a romantic situation on the Danube and the Inn; population, 9000; lat. 48° 55′ N.; lon. 21° 29′ E. It has two suburbs—Innstadt and Ilzstadt—and several bridges. On a hill 400 feet high is the fortress Oberhaus, which is connected with the castle Niederhaus lying below it. It has some manufactures and considerable commerce. The principal public buildings are the cathedral (the old residence of the prince bishops) and the Jesuits' college. Passau is celebrated in history for the treaty concluded here August 22, 1552, by which the Protestants obtained the free exercise of their religion and the acknowledgment of their political rights. See *Reformation*, and *Charles V.*

PASSION FLOWER (*passiflora*); a beautiful genus of climbing plants, containing numerous species, remarkable for the elegance and singular form of their flowers. Their stems are woody, or, more frequently, herbaceous, provided with tendrils, and bearing alternate simple or lobed leaves; the flowers are axillary, and supported on peduncles; the calyx is widely-spreading, and divided into ten parts, the five interior of which have the form of petals, or are sometimes wanting. To the base of the calyx is attached an interior crown, composed of a great number of filaments. There are five stamens, which have their filaments united at base around the style. The fruit is a large one-celled berry, often indeed, approaching a gourd in size, containing numerous seeds, and in many species is edible, though not rich in flavour. The water-lemon of the West Indies (*P. laurifolia*) bears fruit as large as a hen's egg, containing a whitish watery pulp, which has a peculiar aromatic, delicately-acid flavour, and allays thirst agreeably.—The sweet calabash of the same countries (*P. maliformis*) has the fruit of the size of an apple, enclosing a sweetish pulp. It is often called *granadilla*, together with several other species, and is served up in deserts. The sirup and decoction of the flowers of the *P. murucuja*, also a native of the West Indies, are much used as a narcotic, and afford a good substitute for opium.

PASSION OF CHRIST; the crucifixion of Jesus, with all its attendant sufferings. It is celebrated in the Catholic and most Protestant churches on the European continent during Lent (the seven weeks preceding Easter), and particularly during the Passion-week (the week preceding Easter), by sermons relating to the sufferings of the Saviour. The Catholics fast during Lent. The churches, and especially the altars, are deprived of their ornaments; the bells are not rung; public amusements are discontinued. The season of Lent is preceded, in most countries, by the carnival. In Rome, the celebration of the Passion-week in the *Capella Sistina* is famous on account of the incomparable music in the papal chapel. There the compositions of Palestrini, Pergolese, Allegri, and others, are heard in the purest style. The *Officium Hebdomadæ Sanctæ juxta Formam Missalis et Breviarii Romani sub Urbano VIII* contains the rites of worship in the Passion-week prescribed by the Catholic church. The passion of Christ formed the subject of the first theatrical representations, which were prepared by the clergy, and thus, strange as it may seem, became the origin of the modern theatre. See *Comedy*, *Mysteries*, *Drama*, and *Theatre*.

PASSION-WEEK. See *Passion of Christ*.

PASSIVE and ACTIVE TRADE. By *active trade*, writers understand that which a nation carries on in foreign marts, whither it transports articles of commerce, and receives the returns: by *passive commerce*, that which it carries on with foreigners who come to its marts to sell and to buy. Some attach to active commerce the further idea of an advantageous balance of trade. (See *Mercantile System*.) It is an erroneous notion, which has led several governments to injurious laws, that the active commerce is always better than the passive.

PASSOVER (Hebrew, *passa*, a sparing, a passing over); the Jewish feast, in commemoration of the sparing of the Israelites, when the first-born of the Egyptians perished, and of their escape out of Egypt. It was celebrated on the first full moon of the spring, from the 14th to the 21st of the month Nizan. (See *Easter*.) To this festival, as long as the Israelites remained in possession of Palestine, they assembled originally at the tabernacle, and from Solomon's time, at the temple. During the eight days of the feast, they were permitted to eat only unleavened bread, because their hasty departure from Egypt had obliged them to take their dough with them before it was leavened; hence the passover was also called the "feast of unleavened bread." Every householder, with his family, ate, on the first evening, a lamb killed by the priest, which was served up without breaking the bones. Thanksgiving, and the relation of incidents from the history of the Exodus, gave this festival its religious character. Offerings of firstlings of the flocks and herds, and first fruits, were also presented in the temple. The passover was the principal Jewish festival, and is still observed by the Jews, by eating unleavened bread and by public prayers.

PASS PAROLE; a command given, which passes from mouth to mouth along the line of a regiment or army.

PASSPORT; an instrument given to travellers by the proper authorities, describing their persons, purposes, and destinations, intended to show that their characters are good, and their objects in travelling lawful. *Passport* also signifies a license for importing contraband goods, or for exporting and importing merchandise free of duties. These last are always given to ambassadors, and other public ministers, for their baggage, equipage, &c.

PASSWAN OGLU. See *Widdin.*

PASSY; a village not quite a league from the centre of Paris. Its vicinity to the capital, the Bois de Boulogne, and the river, renders it peculiarly interesting. It is likewise esteemed for its mineral waters, the salubrity of its air, and its charming views in every direction. It is much visited by the Parisians, in summer, for the promenade, the *fête champêtre* at Ranelagh, &c. Franklin resided here while in France.

PASTE; a glass made in imitation of gems. The base of all artificial stones is a compound of silex, potash, borax, red oxide of lead, and sometimes arsenic. Pure boracic acid and colourless quartz should be used. Hessian crucibles are better than those of porcelain. The fusion should be continued in a potter's furnace for twenty-four hours. The more tranquil and continued it is, the denser the paste, and the greater its beauty.

Pastes.	1	2.	3.	4.
Rock crystal,	4056 grs.		3456	3600
Minium,	6300 "		5328	
Potash,	2154 "	1220	1944	1260
Borax,	276 "	360	216	360
Arsenic,	12 "	12	6	
Ceruse of clichy,		8508		8508
Sand,		3600		

Topaz.	*No.* 1.	*No.* 2.
Very white paste,	1008	3456
Glass of antimony,	43	
Cassius's purple,	1	
Peroxide of iron,		36

Ruby; paste, 2880, oxide of manganese, 72.—*Emerald*; paste, 4608, green oxide of copper, 42, oxide of chrome, 2.—*Sapphire*; paste, 4608, oxide of cobalt, 68, fused for thirty hours.—*Amethyst*; paste, 4608, oxide of manganese, 36, oxide of cobalt, 24, purple of cassius, 1.—*Beryl*; paste, 3456, glass of antimony, 24, oxide of cobalt, 1½.—*Styrian garnet*; paste, 502, glass of antimony, 256, cassius's purple, 2, and oxide of manganese, 2. In all these mixtures, the substances are blended by sifting, fused very carefully, and cooled very slowly, being left on the fire from twenty-four to thirty hours.

PASTEL, or PASTIL; a kind of paste composed of several colours, and ground up with gum-water, either together or separately, in order to make crayons to paint with on paper or parchment. (See *Crayon*, and *Drawing*.) This kind of painting possesses some advantages over the modes more commonly practised. Its great defect is its want of durability.

PASTORAL, or IDYL (εἰδύλλιον, a little image or picture, thence a little poem), is the general name of those poems which represent men in the simplicity and innocence in which they are thought to have lived before the origin of civic relations, and the vices thence resulting. When we look back in imagination to an original state of man, we naturally refer it to a shepherd's life, since feeding flocks and tilling the ground were the first occupations of man, and are older than civil society. As the first strains of poetry must have been heard in the primitive times of the human race, and as a shepherd's life is congenial with this mode of occupation, we naturally consider poetry as having originated in the pastoral period. The wonders of nature which lay every moment before the shepherd's eyes, must have kindled in his breast poetic fire. The proper idyl, however, as a peculiar style of poetry, had its origin in a corrupt state of society, on account of the desire of men for a better and more natural state of life. The poetic idea of pastoral life, however, is not supported by experience; for the shepherds of the present day are rude and barbarous, whether living in tribes, or forming a class in the midst of men of other occupations. There have been both epic and dramatic idyls. To the epic belong the pastoral romances of ancient and modern poets; also the *Luise* of Voss, and the Hermann and Dorothea of Goethe, &c., and, in a more limited sense, the greater part of the idyls of Theocritus, and his imitators, Virgil and Calpurnius. Among the dramatic are Guarini's *Pastor Fido*, Gesner's *Evander*, and several other pieces of the moderns, to which may be added the *satyrica* of the Greeks. The greater part of the bucolics and eclogues, of the ancients and moderns, are lyric. The idyl must show a world in which nature alone gives laws. Restrained by no civil customs, by no arbitrary rules of politeness, men must there give themselves up to the impressions of nature. They know no wants but those which nature imposes, and no blessings but the gifts which she bestows. Their principal passion is love, but love without restraint, without dissimulation, without Platonic sublimity. Their arts are bodily exercises, singing and dancing; their riches fruitful flocks; their utensils a shepherd's crook, a flute, and a cup. There are also allegoric idyls, among which are the first and tenth eclogues of Virgil, the idyls of Madame Deshoulières, and, in a measure, Pope's Messiah. The principal writer of idyls among the ancients was Theocritus, who has likewise represented the most simple relations of city life. He was followed by Bion and Moschus. Pope has imitated Virgil in four pastorals; and Gesner was regarded by some former critics as a model for pastoral poets. His fame, however, has diminished.

PASTORALE, in music; a rural composition, of an idyllic character; also a composition for a dance in this character, generally in six-eighth time.

PASTORALE (*collegium pastorale*) is used to designate that part of theology which includes the execution of the duties of the clergyman, the application of his theological knowledge—the practical part of theology. It is also called *pastoral theology*, *pastoral science*, *pastoral wisdom*, or *pastoral prudence*. But the latter, the *prudentia pastoralis*, more frequently includes only certain rules of prudence which experience has shown to be important for the execution of clerical duties. According to the widest meaning of the *pastorale*, it is to be divided into as many heads as there are branches of the official duties of a divine. In respect to his office as teacher, it comprises, therefore, 1. pulpit eloquence; 2. catechesis (q. v.); 3. liturgics, in its widest sense, the administration of the sacraments, the service at the altar and before the congregation; 4. every thing which is necessary for a clergyman to know as the adviser, comforter, and leader of his flock, the duties of the confessional, the consolation of the sick and sorrowful, the preparation of the sick and the condemned criminal for death, and every thing which is requisite for the maintenance of church discipline, so that, with Catholics, the chief part of the canon law is comprised in it. Catholics call, also, the official collection of all the ceremonies attached to the administration of the sacraments, and the other public duties of the clergyman, the *pastorale*. It is pretty much the same as that which is better known under the name of *Rituale Romanum*, except that this has received the papal revision and confirmation. Thus the *pastorale* of the Roman Catholic is a written code, while that of the Protestant minister consists of principles addressed merely to his understanding.

PASTORAL THEOLOGY. See *Pastorale.*

PATAGONIA; a vast country, occupying the southern extremity of South America, and extending from lat. 35° 38′ S., where it borders on the province of Buenos Ayres and Chile, to cape Froward, on the straits of Magellan, in lat. 53° 54′ S., a distance of about 1100 miles. Little is known of this extensive region, which has not been colonized by any European nation, and has never been thoroughly explored by travellers. It was discovered by Magellan in 1519, and was visited by Byron in 1764, and by Wallis in 1766. In 1782, the coasts were surveyed by the Spaniards, whose chief attention was, however, directed to the examination of the straits of Magellan: previous to that time, it was uncertain whether there was not a navigable channel farther north than those straits. In 1826—1830, captain King examined the coasts of Patagonia and Tierra del Fuego, and corrected the errors made by the Spaniards in their survey. The western coast he found to be bordered by a range of islands, in the rear of that usually laid down on the maps, and equal to it in breadth. Tierra del Fuego was also found to be intersected by a navigable channel, which captain King called Beagle channel. (See his *Observations on the Geography of the southern Extremity of South America, Tierra del Fuego*, &c., read before the geographical society of London in May, 1831, and published in their Journal for 1831.) The Andes, in this part of the continent, are about 3000 feet high on an average, and the deep inlets which form the numerous archipelagos and peninsulas of the western coast, penetrate quite to their base. The climate, as might be expected, from the high latitude of the country, is rigorous; yet the plants and birds of the warmer regions are found here. The natives bear among themselves the names of *Moluches*, or *Warriors*, and *Puelches*, or *Easterns*. One of the tribes of the former, from their inhabiting Arauco, has received from the Spaniards the name *Araucanos*. (See *Araucanians*, and *Ercilla*.) One tribe of the Puelches is the people known to voyagers under the name of *Patagonians*. They are a nomad people, and wander from the straits of Magellan to the pampas (q. v.) of Buenos Ayres, a distance of about 1000 miles. They are often engaged in hostilities with the Spaniards, and are formidable by their courage and numbers. "They are a large-bodied people," says Falkner, who resided in the country forty years, and wrote the best account which we have of the interior (Description of Patagonia, 1774), "but I never heard of that gigantic race which others have mentioned, though I have seen persons of all the tribes of southern Indians."—From Chile to the Magellanic strait, a great part of the country seems to be bleak, mountainous, and barren. The interior, in many places, produces good timber. Much of the country near the western coast is dry and barren, and uninhabited. Deer, guanacos, wild horses, pumas, jaguars, ostriches, and other animals, are found in Patagonia. See *South America.*

PATAM, or PATNAM; the ending of several Hindoo names for places, signifying *town;* for example, *Seringapatam* (city of Vishnoo, or Srinanga.)

PATAPSCO; a river of Maryland, which runs south-east into Chesapeake bay, between North point and Bodkin's point. It is navigable to Fell's point, in Baltimore, fourteen miles, for ships drawing eighteen feet of water.

PATENT, in law, is the exclusive right of using and vending a certain composition or combination of matter, as a medicine or a machine. This right is not derived from the law of nature, as the whole field of inventions and improvements is open to all men, and one cannot monopolize a part of it by prior discoveries. By the common law of England, monopolies were declared to be generally void, and patents for new inventions, being a species of monopolies, would, according to this doctrine, be void by that law. But they seem to form an exception to this rule; for it was held that the king could confer on the inventor of any useful manufacture or art the power of using it for a reasonable time. But the law of patents, as it now stands in England, rests upon a statute of 21 Jac. I. c. iii. and in the United States of America, on statute Feb. 21, 1793, and April 17, 1800. In France, until 1790, inventors were generally obliged to keep their discoveries secret, in order to secure to themselves a small part of the benefit of them. In an early period of the French revolution, a law was passed in favour of new inventions, formed on the basis of the English statute. The French law of Jan. 7, 1810, declares that every discovery or new invention, in every species of useful industry, is the property of its author. In England, patents are now, as they were before the statute of James I., granted by the crown. Letters patent are made out by the secretary of state in the name of the United States of America, bearing *teste* of the president.

What is patentable? In general, any invention of a new and useful art, machine, manufacture, or composition of matter not known or used before, or any new and useful improvement in any art, machine, or manufacture, or composition of matter. The invention must be *new*. In England, a manufacture newly brought into the kingdom, from beyond sea, though not new there, is allowed by the statute of James; because that statute allows a patent for any new manufacture within this realm. By the patent law of the United States of America, if the thing patented was not originally discovered by the patentee, but had been in use, or had been described in some public work anterior to the supposed discovery by the patentee, or if he has surreptitiously obtained a patent for the discovery of another person, the patent is void. In France, by the law of Jan. 7, 1810, whoever introduces into that kingdom a foreign discovery shall enjoy the same advantages as if he were the inventor. In England, the publisher of an invention is entitled to a patent, whether he be the inventor or not. The subject of a patent must be vendible, in contradistinction to any thing that is learned by practice. The invention must be *material* and *useful:* thus the substitution of one material for another is insufficient to support a patent; as of brass hoops to a barrel instead of wooden ones. So there cannot be a patent for making in one piece what before was made in two. But if one elementary thing be substituted for another, as if that be done by a tube which was before done by a ring, a patent for the improvement would be good. It must not be hurtful to trade, nor generally inconvenient, nor mischievous, nor immoral, as an invention to poison people, or to promote debauchery. Patents for improvements are valid, as for an improved steam-engine; but if the improvements cannot be used without the engine which is protected by a patent, they must wait the expiration of the patent. But a new patent may be taken out for the improvement by itself. A combination of old materials, by which a new effect is produced, may be the subject of a patent. The effect may consist either in the production of a new article, or in making an old one in a better manner, in a shorter time, or at a cheaper rate. A patent may be obtained for a method or process by which something new or beneficial is done, when it is connected with corporeal substances, and is carried into effect by tangible means, as in the case of Watt's steam-engine, which was described to be a method of lessening the consumption of fuel in a steam-engine. So a chemical discovery, when it gives to the community some new, vendible, and beneficial substance, or compound article, is a subject of a patent, as medicines, &c. But a patent for a mere curiosity is void. If the manufacture in its new state merely answers as well as before, the alteration is not the subject of a patent: nor is a mere philosophical abstract principle, nor the application or practice of a principle, the subject of a patent. No patent can be obtained for the expansive operation of steam; but only for a new mode or application of machinery in employing it.

Right how lost. The inventor may lose his right to a patent by using, or allowing others to use, his invention publicly. It was considered that Dr Hall had not lost the right to a patent for his discovery of the object-glasses, because he had not made it known to others, though it was not immediately patented. If the secret of an invention is known only to a few persons, and one of them puts it in practice, then a patent afterwards obtained by any one of them is void. This happened to Mr Tennant, because a bleacher, who had not divulged the secret to any other person but his two servants, had used the same kind of bleaching-liquor for several years anterior to the date of Tennant's patent. Where a person who sought a patent for making spectacles incautiously told an acquaintance of the principle of the invention, by which means a person of the same trade made a similar pair, and the inventor, seeing them in a shop window, employed a friend to purchase them for him, and the patent was afterwards granted, it was said to be secure. The question does not, however, appear to have been brought before a court, and Mr Godson thinks that the patent was void. A patent for British imperial verdigris was declared to be void, because the inventor had, four months prior to the sealing of the grant, sold the article under a different name. Whether experiments made with a view to try the efficacy of an invention, or the extent of a discovery, are a *using*, and dedicating the invention to the public, within the statute of James, has not been decided; but it would be difficult to say how much a substance or machine might be used without running great risk of invalidating the right to a patent. In France, if the inventor do not, within two years, put his discovery into activity, or do not justify his inaction, the patent is annulled.

Duration of the Patent. In England and the United States of America, patents are granted for a term not exceeding fourteen years. The time in England may be prolonged by a private act, and, in the United States of America, by act of congress. In France, by the law already mentioned, patents are given for five, ten, or fifteen years, at the option of the inventor; but this last term is never to be prolonged without a particular decree of the legislature. The duration for imported discoveries is not to extend beyond the term fixed for the privilege of the original inventor in his own country. In France, if the inventor obtains a patent in a foreign country after having obtained one in France, the patent is annulled.—*Caveat.* In England, a *caveat* is an instrument by which notice is requested to be given to the person who enters it, whenever any application is made for a patent for a certain invention, which is therein described in general terms. It must be renewed annually. It is simply a request that, if any other person should apply for a patent for the same thing, the preference may be given to him who entered it. In the United States of America, in case of interfering applications for a patent, they are submitted to the arbitration of three persons, appointed one by each applicant, and one by the secretary of state.

Specification. The invention for which a patent is granted must be accurately ascertained, and particularly described. The disclosure of the secret is the price of the monopoly. The specification must be such, that mechanics may be able to make the machine by following the directions of the specification, without any new inventions of their own. The patent and specification are linked together by the title given to the invention in the patent, and the description of it in the specification. The specification must support the title of the patent: thus a patent taken out for a *tapering-brush* is not supported by the specification of a brush in which the bristles are of unequal lengths. It must point out what parts are new and what old. It must not cover too much: if it does so, it is not effectual, even to the extent to which the patentee would be otherwise entitled; as, if there be a patent for a machine and for an improvement upon it, which cannot be sustained for the machine, although the improvement is new and useful, yet the grant altogether is invalid, on account of its attempting to cover too much. A patent for a new method of drying and preparing malt is not sustained by a specification in which is described a method for heating, &c., ready-made malt: so a patent for an invention founded on a principle already known, for lifting fuel into the fire-grate from below the grate, in the specification whereof was described a new apparatus, was held to be bad for not claiming the new instrument as the thing invented: so when a patent was "for a new method of completely lighting cities, towns, and villages," and the specification described improvements upon lamps, the patent was held to be void. The subject must be given to the public in the most improved state known to the inventor. A patent, in England, for steel-trusses, was held to be void, because the inventor omitted to mention that, in tempering the steel, he rubbed it with tallow, which was of some use in the operation. The specification must not contain a description of more than the improvement or addition. If there be several things specified that may be produced, and one of them is not new, the whole patent is void. In England, if any considerable part of a manufacture be unnecessary to produce the desired effect, it will be presumed that it was inserted with a view to perplex and embarrass the inquirer: thus, in 1 Term Reports, 602, in Turner's patent for producing a yellow colour, among other things, *minium* is directed to be used, which, it appeared, would not produce the desired effect, and, for this reason, the validity of the patent might be impeached. In the specification of Winter's patent, 1 Term Reports, 602, a great number of salts were mentioned, by which it appeared that either might be used to make the subject of the patent, but only one would, in fact, produce the effect; and, for this reason, the patent was held to be void. If the patentee makes the article of cheaper materials than those which he has enumerated in his specification, although the latter answer equally as well, the patent is void. In England, if the improved manner of using the invention be unintentionally left undescribed, still the patent is void. (1 *Mason's Reports*, 189.) In France, the general rules, in these respects, are similar.

Enrolment. In England, a patent is void unless it is enrolled. The time allowed for the enrolment is now generally confined to one month. Enrolment cannot be dispensed with, though it be to keep the specification secret. After a patent has passed, the time for enrolment cannot be enlarged without an act of parliament. In the United States of America, the patent, after the seal of the United States of America is affixed, is recorded in a book kept for the purpose.

Infringement. Whether any act is really an infringement of the patent, is a question for the jury. The using the least part of the manufacture is an infringement. In Manton *v.* Manton, the infringement consisted in making a perforation in the hammer of a gun in a direction a little different from that in the patent article. If the article manufactured be of a different form, or made with slight and immaterial alterations or additions, if the manufactures are really and substantially the same, the patentee is entitled to a remedy, as where the position of the different parts of a steam engine were reversed. Where several independent improvements are made in the same machine, and a patent is procured for them in the aggregate, the patentee is entitled to recover against any person who shall use any one of the improvements so patented, notwithstanding there shall have been no violation of the other improvements.—*Remedy for Infringement.* The remedies for infringement, in England, are by an action at law for the damages, or by proceedings in equity for an injunction and account. The remedy sought in equity is for instant relief, and it is often preferable to proceed in equity before a suit is commenced at law. In the United States of America, the circuit court has original cognizance, as well in equity as at law, in regard to patents, and may grant injunctions. The damages for a breach of the patent right, in the United States of America, are three times the actual damage sustained by the patentee: the jury are to find single damages, the court are to treble them. In France, the patentee, in case of infringement, shall recover the damage he may sustain, and a penalty for the benefit of the poor, not to exceed 3000 francs, and double in case of a second offence.—*Repeal.* If a patent be void, in England, the king may have a *scire facias* to repeal his own grant. All persons are injured by the existence of an illegal patent for an invention, and every one is therefore entitled to petition for a *scire facias* to have it cancelled. Patents are repealed, in the United States of America, by a process in the nature of a *scire facias.*—*Who may obtain a Patent.* Aliens who have resided two years in the United States of America are allowed to obtain patents under the act of 1800, on their making oath that the invention has not, to the best of their knowledge or belief, been used in any country before. The English law has no restrictions on this head, and it is every day's practice to grant patents for new inventions to Americans and other foreigners.

An act has been passed in a late session of parliament to do away with some of the defects with which our antiquated patent laws are encumbered; and although it does not pretend to an entire removal of the causes of complaint, yet considering the admitted difficulties of the case, and the very objectionable nature of some of the former propositions for amendment, we are not sorry that the work of improvement has been begun with caution; at the same time we wish to consider what has been done only as a beginning, and hope it will lead the way to a general amelioration.

One great grievance of the system, was the destruction of all right to a patent which resulted from an inadvertent claim put in to any part of an invention which might not actually be new, although that circumstance should be unknown to the inventor, and even although the part claimed should be a small and unessential portion of the whole invention. To make this matter clear, it must be stated that, in explaining the nature of an invention, such as a machine for instance, the patentee is compelled to describe the construction of his invention in the fullest detail, so as to enable an ordinary workman to construct a similar machine. As in every such new invention, certain parts must also necessarily be well known, certain wheels and levers will be like wheels and levers in other machines; and as to these wheels and levers the patentee can have no exclusive right, he is expected to declare in his specification what parts of the machine he claims as his own invention. To these alone he has exclusive right; all other parts are public property, and may be used by any one. Thus far all is right; if it were otherwise, a patentee might be allowed a right to what is not his own. The grievance complained of is, that if a patentee should inadvertently lay claim to any part of his new invention, which part might afterwards be found not original, he lost not only his right to an exclusive use of that one part, but to the entire invention, however new it might be. He was thus cooped up in a dilemma; if he did not claim the whole of his invention, from a fear of overclaiming, he of course lost his right to that which he did not claim; if, on the contrary, he claimed all which was his own, and it should be found that some part was not original, then he lost his whole patent. The motive to this severity seems to have been the wish to prevent by a penalty an unprincipled schemer from endeavouring to appropriate to himself more than his own. But while the schemer was punished, the honest inventor was often a sufferer. A new machine might have great merit, it might in principle and action be perfectly new; but some of its details might have been used in some other machine now in disuse, quite unknown to the inventor. This is discovered by some rival manufacturer, and the patentee loses his right. By the act now passed, this grievance is done away with; if a patentee should be in the situation supposed, if he should find that some portion of his invention has been anticipated, he may now, on a proper representation, obtain leave to enter and enrol a disclaimer of such portion, and remain in the situation he would have been in, had no such claim ever been put forward.

It has been objected to this alteration, that advantage may be taken of it by a dishonest schemer, who may take out a patent for an invention not his own, and then, as he finds himself discovered, enter a disclaimer, first to one part and then to another, as such parts are objected to, and in the mean time reap all the advantage of his patent, as though the invention were his own. This we imagine is an impossible occurrence; it must be remembered that the enrolment of the disclaimer is not a matter of right, that it may be refused by the attorney-general, unless a sufficient cause is alleged for the alteration, and that in case of fraud it would undoubtedly be refused. There is also another check, and a strong one, against such a practice: the disclaimer cannot be received in evidence, in case of an action brought before such disclaimer was enrolled. A patentee, therefore, who should make an overclaim, and against whom an action should be brought in consequence of that overclaim, will, as far as that action goes, stand precisely in the situation he would have stood in before the new act was passed. He will be liable to the same penalties, and be put to the same expense in the suit. The only difference is, that he will be enabled to protect himself from the loss of his whole patent in such a case, and will stand upon his own right in future. Now an honest patentee will, it is true, suffer in the immediate action the penalty of his inadvertence, but no more. The dishonest one will render himself liable to the same penalty, as often as he shall attempt to make use of any right given him by a fraudulent claim.

The second clause enacts, that if a patentee shall have reproduced some old invention, believing himself to be the inventor, it shall be in the power of the crown, upon a recommendation of the judicial committee of the privy council, to continue the patent to the patentee, wherever it shall appear that the invention has not been publicly and generally used. It is feared by some persons that all kinds of old inventions will be brought up again, and promulgated as new, under favour of this clause, and that every body will be taking out patents for old and abandoned projects. This appears very absurd. To say nothing of the expense of taking out patents, and the almost certainty of their being useless to the patentee (for we may be well assured, that in ninety-nine cases out of a hundred, the inventions would not have been abandoned if they had not been useless,) there are so many checks against the continuance of such patent by the crown to any but a *bonâ fide* re-inventor, that few persons will feel inclined to rake out old books for the purpose of picking up lost inventions. If any person should be lucky enough to re-produce an invention of value abandoned from any cause, and generally forgotten, we see no harm in his having the monopoly of its use for a few years, as a recompense for his bringing to light a valuable idea, though we would rather he should be entitled to it without any misrepresentation.

The third clause contains a provision against the repeated vexatious actions by which a patentee might be put to enormous law expenses under the former act. Before the passing of the new law, although an action respecting the validity of a patent might be decided in favour of the holder of the patent, this verdict was no bar to a future action, nor to any number of future actions. Although nothing new could be alleged, although it was but going over the same ground again and again, the patentee might be compelled year after year to defend himself against fresh actions to his great injury, perhaps to his ruin. The clause enacts, that in any action respecting the validity of a patent, if a verdict pass in favour of a patentee, the certificate of the judge who tried the action may be adduced in evidence on any future action; and if the verdict in such subsequent action be given in favour of the patentee, he shall receive treble costs.

By the fourth clause, an extension of the term of a patent, not exceeding seven years, may be granted by his majesty, on a recommendation of the judicial committee of the privy council, who may call and examine witnesses in the case of a petition for extension. This is decidedly an improvement: the term of fourteen years granted indiscriminately by every patent, is too short, in some cases, to render any profit to an inventor, and this chiefly in those inventions of great value which require time to introduce. We may instance Watt's improvements on the steam-engine, which, from prejudice and other causes, were hardly in general use when the term granted by his patent expired. By the old act, no extension could be obtained without an application to parliament, which was attended with so many difficulties that it has been rarely resorted to.

The fifth and sixth clauses refer to the manner of conducting trials for infringement of patent rights, and regulate the costs in such actions. The last clause inflicts a penalty upon any person putting the name or mark of a patentee upon any article without his permission.

Here follows a more detailed abridgment of the act. *An act to amend the Law touching Letters Patent for Inventions.* [5 and 6 Will. IV. c. 83.—10th September, 1835.]

1. Reciting that it is expedient to make certain additions to and alterations in the present law touching letters patent for inventions, as well for the better protecting of patentees in their rights, as for the more ample benefit of the public: enacts, that any person having obtained letters patent for any invention may enter with the clerk of the patents of England, Scotland, or Ireland, respectively, as the case may be, having first obtained the leave of his majesty's attorney-general, or solicitor-general, in case of an English patent, of the lord-advocate or solicitor-general of Scotland in the case of a Scotch patent, or of his majesty's attorney-general or solicitor-general for Ireland in the case of an Irish patent, certified by his fiat and signature, a disclaimer of any part of his specification, or a memorandum of any alteration therein, not being such as shall extend the exclusive right granted by the said letters patent; and which, when filed, shall be deemed part of such specification; but a caveat may be entered as heretofore; and such disclaimer shall not affect actions pending at the time; and the attorney-general may require the party to advertise his disclaimer.

2. Where a patentee is proved not to be the real inventor, though he believed himself to be so, he may petition his majesty in council to confirm his letters patent, or grant new ones; and the said petition shall be heard before the judicial committee of the privy council, who, on being satisfied that such patentee believed himself to be the first and original inventor, and that such invention had not been generally used before the date of such first letters patent, may report their opinion that the prayer of such petition ought to be complied with, whereupon his majesty may, if he think fit, grant such prayer; but any person opposing such petition shall be entitled to be heard before the said judicial committee: and any person, party to any former suit touching such first letters patent, shall have notice of such petition.

3. If any action or suit, a verdict or decree, shall pass for the patentee, the judge may grant a certificate, which being given in evidence in any other suit, shall entitle the patentee, upon a verdict in his favour, to receive treble costs.

4. Allows a patentee, on advertising as therein mentioned, to apply to the privy council for a prolonged term. If the judicial committee report in his favour, his term may be prolonged for seven years; but such application must be made before the expiration of the original term.

5. In case of action, &c., notice of objections to be given with the pleadings.

6. Costs in actions for infringing letters patent, to be given as either party has succeeded or failed in any part of his case, without regard to the general result of the trial.

7. Penalty for using, unauthorized, the name or device of a patentee, &c., £50, one half to his majesty, and the other to any informer.

Mr Farey, who has had much experience in superintending the taking of patents, states, that the average expense of a patent for England, may be estimated at £120; for Scotland, at £100; and for Ireland, £125.

PATERA; a small dish or vase, in which the Greeks and Romans offered libations of wine to the gods at festivals and sacrifices, and in which they received the blood of offered victims. It was also a mark of the deity and his worship. It is seen upon altars, and in the hands of officiating priests.

Patella, a smaller sort, gave to the household gods the name *Patellarii.*

PATERCULUS, Caius Velleius, an ancient Roman historian, was born in the year of Rome 735, of a family in Campania, which had borne various important offices in the state. He served under Tiberius in Germany, as commander of the cavalry, and, in the first year of that emperor's reign, was nominated pretor. Nothing further is known of him; but the praises he bestowed upon Sejanus have led to a supposition that he was a partisan of that minister, and involved in his ruin. His death is placed by Dodwell in the year of Rome 784, in his fiftieth year. Paterculus composed an abridgment of Roman history, in ten books, of which the greater part has perished, and, unfortunately that which remains is incurably corrupted, only one manuscript having been discovered. His style is pure and elegant, and he excelled in a brief and forcible manner of drawing characters; but his connexions with Tiberius and Sejanus rendered him an adulator of those detestable personages, and warped his representations of the actions and characters of the republican party. The most esteemed editions of this classic are those of Burmann (Leyden, 1719), of Ruhnkenius (Leyden, 1779), and of Krausius (Leipsic, 1800).

PATERNOSTER; 1. the Latin for *our Father*, or the Lord's prayer; 2. every tenth large bead in the rosary which Catholics use in their devotions; at this they repeat the Lord's prayer, and, at the intervening small ones, only an *Ave Maria;* 3. the rosary itself.

PATHOGNOMIC, in medicine (from παθος, a disease, and γινωσκω, I know); an epithet signifying that a symptom or course of symptoms to which it is applied is inseparable from, or exclusively characteristic of a particular disease.

PATHOGONY (from παθος, suffering, and γονη, origin); the science of the origin of diseases; a part of pathology.

PATHOLOGY (from παθος, a disease, and λογος, doctrine or system) signifies the science or doctrine of diseases. As physiology teaches the nature of the functions of the living body in a state of health, so pathology relates to the various derangements of these functions which constitute disease. Its objects, therefore, are to ascertain the various symptoms which characterize the disorders of each organ of the body, and especially the diagnostic and pathognomic symptoms, which afford the means of discrimination between diseases that resemble each other; to determine the causes, both predisposing and exciting, by which diseases are induced; to point out the prognosis or the tendency and probable event of each disease, from the changing combination of the symptoms; and, lastly, to teach the indications of cure, and the nature and operation of the remedies adapted to the various circumstances and periods of diseases.

PATKUL, John Reginald, a Livonian patriot, was born in 1660. When Charles XI. of Sweden had encroached on the rights of the Livonian nobility, Patkul took an active part in remonstrating and obtaining a redress of grievances. One of his appeals on this subject (1692) induced the government at Stockholm to summon the provincial authorities, and Patkul in particular, to the Swedish capital. Patkul received a safe conduct, and went to Stockholm; but, fearful of the intention of the court, he withdrew into Courland, and was declared infamous, and condemned to lose his right hand and his head. After spending some time in Switzerland and France, he was received, in 1698, into the service of the Saxon court as privy counsellor, and used all his efforts to carry into effect the plan of a union with Russia and Denmark against Sweden. (See *Augustus II.* and *Charles XII.*) In 1702, he went to Petersburg, and the league with Russia was concluded. He now entered the Russian service, and, after being employed in various capacities, was sent as Russian ambassador to Augustus, and soon after received the command of the Russian auxiliaries, at the head of whom he captured Warsaw. Augustus had just renewed his alliance with Russia by a personal interview with the czar, when, in December, 1705, Patkul, with eighteen of his confidential friends, was arrested and thrown into prison, under pretence that he had entered into treasonable negotiations with Austria and Sweden, and had endeavoured to excite dissensions between the czar and Augustus. Augustus was soon after obliged to submit to the peace of Altranstadt (September 24, 1706), in which the surrender of Patkul to Sweden was stipulated. He was accordingly delivered up to the Swedes, although Augustus had given secret orders that he should be permitted to escape. Peter in vain demanded the release of his ambassador. The Swedish troops are said to have tied him to a cannon on their march from Saxony, and he was tried by a court-martial at the monastery of Casimir, near Possen, and condemned to death. October 10, 1707, he was broken alive on the wheel: his head was cut off, and his body was quartered.

PATMOS. See *Sporades.*

PATNA; a city of British India, in the presidency of Bengal, on the Ganges, 250 miles northwest of Calcutta; population, 312,000. The city is about four miles long and one broad, enclosed by a brick wall, having small round bastions; but many parts are fallen to decay. It contains some mosques and temples, but the houses generally make a mean appearance. The houses of the Europeans are in the suburbs, called *Bankypore*, and are handsomely built of brick. The surrounding country produces the finest opium, and saltpetre, grain, indigo, and sugar. It carries on a large trade with Calcutta. It has been in the possession of the British since 1763, and is the residence of a provincial court of appeal, &c. It is supposed to be the ancient *Palibothra.*

PATOCKI, or BATOCKI; two thin sticks with which criminals were formerly beaten in Russia. The party was stretched on the ground, while one person sat upon his head, the other on his feet. The severity of the punishment may be judged of from the fact that it was abolished by the code of Catharine II. though the knout was left.

PATRAS (anciently *Patræ*); a town of the Morea in the Greek province of Achaia, on the gulf of Patras (see *Lepanto*); lat. 38° 14′ N.; lon. 21° 46′ E. It is well fortified, and its citadel was never taken by the Greeks, but capitulated to the French troops in 1828. Previous to the revolution, it contained about 10,000 inhabitants, chiefly Greeks, and was the emporium of the Morea. The town was almost wholly destroyed in the attacks on the citadel, but has already a population of 8000, who have built up temporary houses of rough boards. See *Greece, Revolution of.*

PATRIARCHS (from the Greek πατρια, family, αρχων, head) are the antediluvian heads of families, and the three fathers of the Hebrew race, Abraham, Isaac, and Jacob. The epithet *patriarchal* is hence used to denote the innocence and simplicity of the early ages, and the venerable dignity of age. The patriarchal government is that which prevails in a state of society in which the people are not yet organized into a nation, but from independent tribes, clans, or families, under the government of their common ancestor, or his representative, the existing head of the family. The term *patriarch*, at a later period, became the title of the presidents of the sanhedrim, which exercised a general authority over the Jews of Syria and Persia after the destruction of Jerusalem. The patriarchate of Tiberias for the Western Jews subsisted till 415, that of Babylon for the Eastern Jews, till 1038. From them, the title was adopted by the Christians, who applied it, from the beginning of the fifth century, to the bishops of Rome, Constantinople, Alexandria, Antioch, and Jerusalem. These patriarchs exercised the power of consecration, and of supervision over the archbishops and bishops within their jurisdictions. While the patriarch of Rome became the supreme pontiff of the West (see *Pope*), the four heads of the Eastern church preserved the title of *patriarch*, but were nearly stripped of their authority by the conquests of the Saracens. The Armenian, Abyssinian, Jacobite, and Maronite churches have their own patriarchs. The patriarch of Constantinople is the primate of the Greek church in the Ottoman empire, and bears the title of *œcumenical*, with the rank of a pacha of three tails. He is invested with his dignity by the sultan. (See *Greek Church*.) The patriarch of Moscow, whose authority extended over the Russian church, was superseded, during the reign of Peter the Great, by the holy synod. In the Catholic church, the archbishops of Lisbon and Venice have the title of *patriarch*. The latter has no superiority over other archbishops; the former is primate of Portugal. The patriarchate of Aquileia was divided, in 1750, into the archbishoprics of Udine and Gorz (since of Laybach).

PATRICIANS; a name given to certain families in Rome, distinguished for their origin, wealth, and honours, and from which the senators were chosen. After the manner of the Athenians, Romulus is said to have divided the Roman citizens into two classes,—patricians and plebeians. The former were originally called *patres* (fathers), because they were viewed as the fathers of the people. From this name was derived the title *patricians*. From these noblemen Romulus formed a senate of 100 persons, who filled the highest offices of state in war and peace, and performed the religious services of the temple till the year of the city 495. The members of this body were styled *senators* from *senectus* (age), because none were chosen but those who enjoyed the fullest confidence of the people from their age (which was required to be at least twenty-five years), their experience and their skill in the administration of public affairs. When the Sabines were received into Rome, 100 new members were added to the senate. On the fall of the republic, the number had increased to more than 1000; but the emperor Augustus reduced it to 600. A distinction was made between the *patres majorum gentium* (patricians of the older families), who were descended from the senators chosen by Romulus, and the *patres minorum gentium* (patricians of the younger families), descended from the senators added by Tarquin the elder. The political superiority of the patricians over the plebeians was secured to them by the right of patronage (*jus patronatus*); but they lost their privileges in the year of the city 261, when the plebeians obtained a complete political equality with the nobles (see *Rome*), and the highest offices became open indiscriminately to patricians and plebeians, and, after the year 308, intermarriages between the two classes were permitted. There was no longer any distinction except that arising from family descent. After this, a sort of nobility (*nobilitas*) was attributed to those who had enjoyed the three highest offices in the state (the offices of consul, pretor, and curale edile). This nobility was transmitted to their posterity by the *jus imaginum*—a right to set up in their porticoes the waxen images of their ancestors. It was not necessary for a person to be descended from a patrician family in order to enjoy this distinction; but it added to the honour of the nobility, particularly if accompanied with great merit. The dignity of the patricians was lessened by the fall of the republic, the civil wars, and the establishment of the imperial dignity. The conquest of Rome by the Goths, which deprived many of the patricians of their liberty or their lives, or compelled them to flee to Constantinople, led to the abolition of all distinction between patricians and plebeians. When the seat of government was removed to Constantinople, Constantine the Great, desirous of restoring the ancient Roman ranks, instituted a new patrician dignity, which was a mere personal title, and which could be acquired only by high birth and distinguished merits. Under the Carlovingians and the succeeding emperors, the title of patrician denoted an exalted rank, and was connected also with the government of Rome and its provinces, and the support of the papal see. Charlemagne assumed the title of a Roman patrician, before he was declared emperor, and Henry IV., as such, deposed pope Gregory VII. In modern times, a few noble families, in the imperial cities were called *patricians*, because they were especially entitled to certain high offices. The patricians arose in the twelfth and thirteenth centuries, when the fear of depredations in the open country, and the flourishing state of the cities, induced many noblemen to settle in them. See *Nobility*.

PATRICK, St, the apostle of Ireland, was born, according to some accounts, in Kilpatrick, Dumbartonshire, Scotland, according to others, in Brittany, near the end of the fourth century, and in his youth was carried to Ireland by some freebooters, and employed in keeping sheep. After spending six years in Ireland, he finally returned home, but, as he relates in his Confessions, was moved by visions to undertake the conversion of the Irish to Christianity. In spite of all obstacles, he preached the Christian doctrine among them, and made many converts. He established churches and schools, ordained priests, as bishop of Ireland, and created bishops. The last years of his life were devoted to acts of piety and religious meditation, and he died, at an advanced age, in 493 or 483. His works, containing his Confessions, were published with remarks by Ware (London, 1656).

PATRIMONIAL or HEREDITARY JURISDICTION; that jurisdiction which a person exercises over others by right of inheritance, or as owner of an estate. It has its name from being considered part of the inheritance (*patrimonium*). It exists still in some parts of Germany, sometimes, though rarely, including even criminal jurisdiction. See *Manor*.

PATRIMONIUM PETRI (*Patrimony of Peter*) is the name of a part of the papal dominions; a province which it is pretended that the emperor Constantine gave to the pope in the fourth century, but which, in reality, came to the popes in the twelfth century, by a grant of Matilda, countess of Tuscany. See *Constantine*, *Matilda*, and *Pope*.

PATRIOT. In the Latin of the middle ages, *patriota* signified a native, in contradistinction to *peregrinus*, a foreigner, i. e. one who did not enjoy the rights of citizenship. As the native, i. e. the citizen, was considered to be attached by his interests to the commonwealth, the word gradually received the meaning of a citizen who loves his country. In the French revolution, it meant a democrat, an adherent of the revolution.

PATRISTICS, THEOLOGIA PATRISTICA; that branch of historical theology, which is particularly devoted to the lives and doctrines of the fathers of the church. The German Protestants have recently paid particular attention to it, as affording a satisfactory, though laborious way of arriving at the history of the Christian doctrine and constitution in the first six centuries. (See *Fathers of the Church.*) Fues, in Tubingen, published, in 1827, a cheap *Bibliotheca Patrum Latinorum*, edited by Protestant and Catholic theologians.

PATROCLUS, the friend of Achilles, was the son of Menœtius, one of the Argonauts, and of Sthenele or Philomela. He accidentally killed Clysonymus, the son of Amphidamus, in a game of dice at Opus. His father saved him by flight, and carried him to Peleus, by whom he was kindly received and educated as the companion of his son. He accompanied Achilles to Troy, and remained, like him, inactive, when the anger of Achilles prevented him from taking a part in the war. At length the necessity of action seemed so urgent that Achilles permitted Patroclus to go to the war, arrayed in his own armour. His success was at first brilliant; but, Apollo having deceived him, and rendered him defenceless, he was slain by Hector. The Greeks recovered his body, which they interred with the highest marks of honour, and established solemn funeral games to his memory. Achilles then resolved to avenge his friend, and to accompany him in death.

PATROL, in war; a round or march made by the guards, or watch, in the night time, to observe what passes in the streets, and to secure the peace and tranquillity of a city or camp. The patrol generally consists of a body of five or six men, detached from a body on guard, and commanded by a sergeant.

PATRON; in general, a protector. The Latin *patronus* signified, in the Roman republic, a patrician, who had plebeians, called *clients*, under his immediate protection, and whose interests he supported by his authority and influence. (See *Patricians.*) *Jus patronatus* signifies, in the Roman law, the right which a master retains over a freed slave. When Rome had reduced many nations under her yoke, noble Romans were sometimes the patrons of whole cities and provinces, and such patronage even descended by inheritance in some families. Thus the patronage over the Lacedæmonians was vested in the family of the Claudii; that of the Sicilians in the family of the Marcelli—an arrangement which, in so crude a state of politics, was not without beneficial consequences. *Patron* was also the title of every advocate who represented the interest of another, his client (*patronus causarum*). Patron, in the canon or common law, denotes a person who founds or endows a church or benefice, and reserves to himself the right of patronage, i. e. the right of disposing of it. (See *Advowson.*) The right of patronage was introduced among Christians towards the close of the fourth century, with the view of encouraging the opulent to erect churches, by giving them the privilege of appointing the ministers to officiate in them. *Lay* patronage is a right attached to a person either as founder or as heir of the founder, or as possessor of the see to which the patronage is annexed *Ecclesiastical* patronage is that which a person is entitled to by virtue of some benefice which he holds. For the patronage connected with the Church of Scotland, which has been the cause of much dispute and disunion, see the article *Scotland*, subdivision *Church.*

PATUCKET. See *Pawtucket.*

PAUL, an apostle, was born of Jewish parents, at Tarsus, in Cilicia, and inherited the rights of a Roman citizen. He received a learned education, and early went to Jerusalem, to study under Gamaliel, one of the most celebrated Jewish Rabbins in the time of our Saviour, who instructed him in the Jewish laws and traditions. He was also well acquainted with the Greek poets and philosophers, as his Epistles show, and learned a trade (probably that of a maker of tents and hangings), according to the custom of the Jewish teachers, by which he afterwards supported himself in his travels. Thus prepared for the office of teacher, he joined, a few years after the death of Jesus, the sect of the Pharisees, and became a persecutor of the Christians; to crush whom the sanhedrim employed him, both in and out of Jerusalem. The Acts of the Apostles contains several instances of the heat of his zeal in this cruel work, upon which he entered from his attachment to the law of his fathers. He was even on his way to Damascus, with full power from the chief priests to arrest the Christians, when he was led, by a miracle (*Acts* ix. and xxii.), to view Christianity in a different light, and to seek a personal knowledge of the excellence of the religion from the instructions of Christian teachers. This sudden conversion, effected by the divine interposition, was indicated by the change of his name from *Saul* to *Paul*, and he engaged in the work of an apostle with an ardour that overcame every difficulty. Arabia, Syria, Asia Minor, Greece, and the islands of the Mediterranean, were the scenes of his unwearied activity in promulgating the doctrines of Christianity. In all his journeys he laboured to establish new churches, and to confirm the faith of those already existing. He made himself useful to the churches of Antioch, Ephesus, and Jerusalem, by instructing them, by arranging their ceremonies, and collecting alms for the poorer members. The churches of Philippi, in Macedonia, of Corinth, Galatia, and Thessalonica, honoured him as their founder; and the Epistles in the New Testament, which he wrote to these churches, and to the churches in the chief cities of Greece and Asia Minor, and to Rome, show the paternal relation in which he stood to them, and the paternal care which he exercised over them. By admitting the Gentiles to a participation in the blessings of Christianity, without requiring them to submit to the Jewish rites, he promoted the progress of Christianity far more than the other apostles, who at first baptized none but their own countrymen. But this conduct exposed him to the hatred of the Jews, who persecuted him as an apostate; and every thing at Jerusalem was prepared for his destruction. In the sixtieth year of the Christian era, after labouring with unwearied zeal, for more than twenty years, to spread the doctrines of Jesus, he boldly went to Jerusalem with the money which he had collected for the support of the oppressed Christians in Palestine. He was there arrested, and brought to Cæsarea, where he was kept a prisoner for two years by the Roman governors, Festus and Felix. The fearless spirit with which he explained his whole conduct excited the same admiration which had been produced in the Areopagus and among the wise men of Athens, (where Dionysius the Areopagite, became one of his adherents), by his enthusiastic eloquence. Having been illegally imprisoned, he appealed, as a Roman citizen, to the emperor, and was sent to Rome. He was shipwrecked at Malta (see *Melita*), and in the spring of the year 62, arrived at the capital of the world. He was treated with respect, but as a prisoner of state, and gained over many distinguished Romans to the Christian faith. It is certain that he was set free in the year 64; but the account of his farther travels in Spain, Britain, Macedonia, Greece, and the borders of Asia, is founded solely on conjecture. In the year 66, Paul returned to Rome, was again arrested, and died the death of a martyr. The history of no apostle is so rich in remarkable events, hardships, and sufferings, as that of this great man. Even the enemies of the religion for which he lived and died, could not deny the gifts of his mind, his deep and extensive knowledge, profound understanding of the nature of religion, richness and acuteness of thought, and a talent for teaching, which combined elegance, perspicuity, and fervour.

PAULA, Francis de. See *Francis de Paula.*

PAUL de Loanda, St. See *Loanda.*

PAUL I., emperor of Russia, son of Peter III. and Catharine II., was born in 1754. His father, on account of his dislike of Catharine, would not acknowledge his legitimacy; but on the death of Ivan (q. v.), in 1763, he became the sole remaining heir to the crown, and was placed under the care of count Panin and Æpinus. His mother treated him with great rigour, and kept him constantly estranged from public affairs during her life. In 1773, he married a princess of Hesse-Darmstadt, who died soon after, and, in 1776, he married a princess of Wurtemberg, who became the mother of the late emperor Alexander (q. v.), the late prince Constantine, the emperor Nicholas, and the grand-prince Michael, and several daughters, among whom is Anna, wife of the present prince of Orange. In 1780, he travelled, with his wife, under the title of *count of the North*, in Poland, Germany, Italy, France, and Holland, and after his return retired to his usual place of residence, the palace of Gatschina, and was permitted to take part neither in civil nor military affairs. On the death of Catharine in 1796, the prince was finally released from his long restraint; and the first acts of his government, after performing the obsequies of his mother, and paying the last honours to his father, were dictated by benevolent intentions. He put an end to the war with Persia, and liberated the Poles who were in confinement in Russia. But the severe treatment to which he had been subjected for forty years, had exercised a most injurious influence upon his character, and, combined with the natural violence and impetuosity of his temper, led to those acts of despotism and folly which stain his reign. He joined the coalition of crowns against France, and sent 100,000 men, partly under Suwaroff and Korsakoff, to Italy and Switzerland, and partly to Holland. The Russian arms were at first successful; but, after the defeat at Zurich (see *Masséna*), his increasing distrust of the British and Austrian courts, and the artful management of general Bonaparte, who dismissed the Russian prisoners, newly clothed and armed, and insinuated new suspicions into the mind of the czar, broke off his connexion with the coalition. Louis XVIII., who had been received into the Russian territory with every mark of attention, and the French emigrants, were ordered to quit the country. Paul had caused himself to be declared grand-master of the knights of Malta (1798), after the resignation of that dignity by the baron Hompesch; but, Britain having conquered the island in 1800, refused to surrender it to the Russian emperor. Paul therefore laid an embargo on all British ships in the Russian ports, and prevailed upon the Swedish, Danish, and Prussian courts to enter into a convention for the protection of their commerce against the encroachments of the British by sea. His internal administration was characterized by similar traits of impetuosity, and, in many cases, of tyranny. His innovations in the army, (particularly the introduction of hair-powder and queues); his prohibition against the wearing of round hats, pantaloons, &c.; his order obliging all persons who met him in the streets to leave their carriage and prostrate themselves before him; and other acts of a similar nature, excited general discontent. Other measures, of a more serious character, finally produced a conspiracy among the nobles. They excited mutual suspicions between Paul and his sons, and Alexander finally consented to assume the government, until the mind and health of his father were restored. (See *Alexander.*) The conspirators entered the antechamber of the emperor in St Michael's palace, at 11 o'clock at night (March 11, 1801), by a secret passage, and the door to the emperor's chamber was opened by the guard, who was deceived by an alarm of fire. An act was then read to him, by which he was to acknowledge himself incapable of conducting the government, and surrender it to Alexander. Paul cried out, "I am emperor, and will remain so;" and he was then despatched by the conspirators. Some accounts say that he was strangled in his bed with his own sash. In the Russian manifesto on the subject, his death was ascribed to apoplexy. See Chateaugiron's *Notice sur la Mort de Paul*, and Carr's *Northern Summer.*

PAUL OF VENICE, father, a celebrated ecclesiastic and historian of the sixteenth century, whose proper name was Pietro Sarpi, was born at Venice, August 14,1552, and was the son of a merchant of that city. He entered young into the religious order of the Servites, in his twentieth year was appointed chaplain to the grand-duke of Mantua, and lecturer on the canon law. After two years, he returned to Venice, and became provincial of his order. He was afterwards made procurator-general of the Servites. A treacherous correspondent having betrayed a letter of father Paul, in which he had observed, that so far from coveting the dignities of the court of Rome, he held them in abomination, brought on him the imputation of being a heretic, while his liberal intercourse with eminent Protestants contributed to increase the prejudices thus excited. In a dispute between the pope and the Venetian government on the subject of ecclesiastical immunities, father Paul showed himself a strenuous advocate for the cause of liberty, and was summoned to Rome, on pain of excommunication, to answer for his conduct; but the affair was compromised. To the vengeance of his political enemies may be attributed an attempt to assassinate him in 1607; on which occasion he received many dangerous wounds from a band of ruffians. Father Paul employed the latter part of his life in writing the history of the council of Trent, in which he has developed the intrigues connected with the transactions of that famous assembly, with a degree of boldness and veracity, which renders the work one of the most interesting and important productions of the class to which it belongs. The labours of father Paul extended to various branches of knowledge; he was deeply skilled in the canon law, and distinguished for his acquaintance with anatomy. He appears to have discovered the valves of the veins which contribute to facilitate the circulation of the blood. He died January 14, 1622, and is said to have expired after uttering the words *Esto perpetua*, which have been construed as a prayer for the prosperity of Venice. The history of the council of Trent was first published in London in 1619, having been transmitted to this country through the medium of the British resident at Venice, Sir Henry Wotton , a personal friend of the author. The works of father Paul were printed at Verona, 1761 (8 vols. 4to), and at Naples, 1790 (24 vols. 8vo).

PAUL THE DEACON, OR PAULUS DIACONUS, also called WARNIFRIDUS, and PAULUS MONACHUS, was born at Friuli, in the eighth century, and was educated in the court of the Lombard kings at Pavia. On the capture of Desiderius, the last king of the Lombards, by Charlemagne, he retired to the monastery of Monte-Casino, where he took the habit. He wrote a history of the Lombards; and as he was an eye-witness of many of the events he mentions, his statements are held to be generally correct. It is contained in Muratori's *Rerum Italic. Scriptores.*

PAUL, ST, VINCENT DE, the founder of the priests of the mission, was born in France, in 1576, studied at Toulouse, and having been captured by the Turks, remained a considerable time in slavery, during which he converted his master. On his return to France, he became parish priest at Clichy, and, by the aid of a rich and pious lady, founded a congregation of missions, the members of which were devoted to preaching to the poor, and performing other acts of benevolence and mercy. Their chief seat was the religious house of St Lazarus, at Paris, whence they were called *Lazarites.* Vincent de Paul died in 1660, and was canonized in 1737.

PAUL, CHURCHES OF ST. The name of St Paul belongs to two celebrated churches, one in Rome, the other in London. The former, which stood without the walls of the city, was burnt July 15, 1823; and the latter, Wren's celebrated work, occupies the place of the beautiful Gothic cathedral (consumed in the great conflagration of 1666, which Dugdale and Hollar have described). The church at Rome, in an unhealthy situation, upon the road to Ostia, a league from the city, was one of the four Basilicæ of Rome, and one of the most important remains of ancient Christian architecture. The first church on this spot to said to have been erected by Constantine, at the request of pope Silvester, upon the place where the apostle Paul was buried. The emperor Theodosius is said to have rebuilt it upon a much extended plan (the cause of the destruction of the first edifice is not mentioned), and following popes completed and adorned it. Even the mosaics upon the outside, the work of Grecian artists, betrayed their early origin: the interior ornaments were probably likewise the work of Greeks, who had fled from the iconoclasts, and taken refuge at Rome. The multitude of magnificent marble pillars, in the interior of the church; the numerous paintings upon the walls; the mosaics upon the principal arch of the central nave; the rafters left visible, made, as report says, of cedar of Lebanon; the floor, composed of various kinds of marble, important to the archæologist on account of the inscriptions found upon it; the great dimensions of the edifice, and a door of 1070 pounds weight, cast at Constantinople, —gave the church a very distinguished place among the public edifices at Rome. The series of likenesses of the popes, 253 in number, which surrounded the interior wall of the principal nave, was particularly valuable. All this was consumed in one night by a fire occasioned by the carelessness of a workman who was repairing the roof. The marble pillars were partially calcined and so far injured, that very few of them could be again used in building. The work of Nicola del Nicolai, *Della Basilica di S. Paoli* (Rome, 1815, fol.), gives the most accurate description of this building.

St Paul's Cathedral, in London, upon an eminence to the north of the Thames. After several attempts to repair the old Gothic cathedral on the same spot (burnt in 1666), every trace of it was removed, and a new foundation laid for the present church. The first stone was laid June 21, 1675. In ten years, the walls of the choir and of the side aisles were completed, together with the circular porticoes on the north and south sides. The last and highest stone of the building was placed upon the summit of the lantern in 1710, and soon after the queen and the two houses of parliament attended service in the church. The whole building was completed in thirty-five successive years, under one architect, Sir Christopher Wren, one master-mason, Thomas Strong, and one bishop of London, doctor Henry Compton. The building is of Portland stone, in the form of a cross. Two rows of massy pillars divide the interior into a nave and side aisles. The west front towards Ludgate street is very noble. The elevated portico forming the grand entrance consists of twelve Corinthian columns, with an upper portico of eight pillars of the Composite order, supporting a triangular pediment. The entablature represents, in relief, the conversion of St Paul, a work of Francis Bird. Two turrets adorn the north-western and south-western angles of the cathedral. Upon the south front, which corresponds with the north, is a phœnix rising from the flames, with the motto *Resurgam* (I shall rise again). The dome is one of the most remarkable points of sight in the view of London. But the interior decoration of this building does not correspond with its exterior magnificence. The pavement is composed of slabs of black and white marble, joined in the manner of a large chessboard, increasing thereby the feeling of vacancy which these vast unornamented walls excite. Captured flags are hung in various parts of the dome and nave. The most favourable view of the interior is from the whispering gallery, in the lower part of the dome. Sir James Thornhill's paintings, illustrative of the most remarkable occurrences in the life of Paul, can be seen to most advantage from this situatian. The great bell is tolled only on the death of some member of the royal family, of the lord-mayor, of the bishop of London, and of the dean of the cathedral. You reach the ball by 616 steps. To break the uniformity of the interior, it was suggested, in 1790, to erect in the interior, monuments and statues to the illustrious dead. The first was in memory of John Howard (1796). The monument of Nelson, who is buried in a tomb in the middle of the building, is the work of Flaxman. There are monuments also to Sir W. Jones, Earl Howe, Sir Joshua Reynolds and others. Over the entrance to the choir, is a marble slab, with this inscription in Latin: " Here reposes Christopher Wren, the builder of this church and city, who lived for more than 90 years, not for his own, but for the public good. Reader, dost thou seek his monument, look around thee." (See *Wren.*) The cost of this building was about £1,500,000. J. Gwilt has written a history of St Paul's. In the Illustrations of the public Buildings of London (with historical notices and descriptions of each building), by the architects J. Britton and A. Pugin, we find, in No. I. (London, 1823), St Paul's church represented and described.

PAUL VERONESE. See *Cagliari.*

PAULETTE. The hereditary succession and venality of almost all the offices in the judicial and financial departments was an abuse deeply interwoven with the whole administration of ancient France, and a source of the must dreadful disorders. In the early period of the monarchy offices were held only at the pleasure of the king; the consequence was, that on the death of the monarch, all the commissions on which the offices of state depended expired. Hence it was necessary for a confirmation from the new king to be obtained, and this rule was regularly observed, particularly from the time of Henry II.; nevertheless, the maxim still remained in force, which Louis XI. had pronounced in an ordinance of 1467, that no officer should be discharged but on his own voluntary resignation, or upon judgment had against him. It is uncertain whether Louis XI. was the first who made offices in the judicial and financial departments venal; but it is well known that Louis XII. adopted this method to defray the expenses of his campaign in Italy. Francis I. gave a new character to the offices of the tax-gatherers by selling them, so that the purchase-money might be regarded as a kind of security; and, under Henry II., this venality was extended also to judicial stations. Instead of the former high offices, in which a single man, as *grand bailli*, *sénéchal*, &c., had administered all branches of public power, judicial tribunals were erected with a collegial constitution (*sièges présidiaux*), in which the dignity of president and counsellor was to be bought with money. Under the succeeding reigns of Francis II., Charles IX., and Henry III., this arrangement was continued, although both the estates of the kingdom and the parliaments were strongly opposed to it. The universal venality of office was legally confirmed by an ordinance of 1597, which permitted all officers to resign their places in favour of a third—a thing which had often been done, though never before authorized by law. To put an end to the urgent requests for reversions, the secretary, Charles Paulet, in 1604, devised the plan of granting liberty to all who should pay a yearly tax of one sixtieth, or one and two thirds per cent., of the income of their offices (properly called *annuel*, but from its inventor, *Paulette*), to transmit their offices to their heirs, who might either hold them or sell them again. Under the succeeding reign, the abuse of this venality of office became gross. If the government wanted money, a number of new offices were created, and a regular salary from the treasury affixed to them, which was to be viewed as the interest of the purchase money. To hold out further inducements to purchasers, other incomes, such as fees and the like, were added, which generally amounted to much more, and necessarily increased the oppressive taxes of the people. Hence the current price of such offices, partly on account of the fees in addition to the salary, and partly on account of the consequent influence and honour, was much higher than the sum paid for them to the public treasury. This system had, moreover, other disadvantages, besides the oppression of the people. It closed the entrance to offices of state against all who had no recommendation but merit. It augmented the number of state-servants beyond all proportion; it brought high stations into the hands of ignorant and faithless men, and drew away from agriculture and trade the capital necessary for their prosperity. It led, finally, to the undermining of the municipal constitutions, which happened near the end of the reign of Louis XIV.; for when no more public offices could be established, those of the towns were arbitrarily seized, which had formerly been filled by the vote of all the freemen. In vain did the more worthy ministers strive to cure the daily increasing evil; necessity constantly dragged them back to the old system. In 1664, according to an estimate made by Colbert, and communicated to the government by Forbonnais—*Recherches sur les Finances de France* (An Inquiry into the State of the Finances of France)—it appeared that there were 45,780 venal offices in the judicial and financial departments, the duties of which might be as easily performed by 6000. The salaries attached to them, and paid out of the public treasury, were estimated at over 8,000,000 livres, for which the king received an *annuel* of only 2,000,000. The whole amount of the drain which they occasioned on the people was estimated at 187¼ millions, and the current price of the offices at near 420 millions. Colbert undertook to diminish the number of offices, but the wars and extravagance of Louis XIV. compelled his successor to resort to the same means for procuring money. From 1689 to 1695, 294 millions were thus collected, and from 1701 to 1709, 426 millions. Some attempts were afterwards made to diminish the evil, but, with all its deleterious effects, it continued till the revolution.

PAULICIANS. In the chains of the Caucasus and Taurus, which unite in Armenia, a few of the ancient Manichæans and Gnostics were remaining in the eighth century, who assumed the name of *Paulicians*, from Paul, their leader, to save themselves from the persecutions to which the Manichæans were always exposed. As iconoclasts, they were favoured or persecuted by the Greek emperors, according as the latter were favourable or otherwise to the worship of images, which the Manichæans totally rejected. When their Manichæism was discovered, in the ninth century, they were subjected to violent persecution. Many of them were put to death; others fled to Mohammedan countries, and assisted them in their wars against the Greeks. In the tenth century, the attempts at the conversion of some Paulicians who returned and were fixed in Thrace by John Zimisces, the Greek emperor, were as unsuccessful as the persecutions had been. When the crusades had opened a way to the middle of Europe, different companies of this sect passed into Bulgaria by land, and others into Italy and Spain, by water. Their successors have since appeared in various parts of Europe, under different names. Of Paulician origin was the doctrine of those devotees resembling the Messalians, who were called *Bogomiles*, on account of their constant use of the expression *Bogmilui* (in Bulgarian, God have mercy on you). In the fifteenth century, many of them were burned at the stake in Constantinople. For the doctrines of the Paulicians, see *Manichæans*.

PAULINE; princess Borghese, sister to Napoleon. See *Bonaparte*.

PAULINIANS, OR PAULANI. See *Minim Friars*.

PAUPER COLONIES. See *Colonies, Pauper*.

PAUPERISM. "It has been computed," says doctor Franklin, "by some political arithmeticians, that, if every man and woman would work four hours each day in something useful, that labour would produce sufficient to procure all the necessaries and comforts of life; want and misery would be banished from the world, and the rest of the twenty-four hours would be leisure and pleasure." When we estimate what a man will do in four hours, we necessarily suppose a certain rate of production; and this rate is greater or less according to the strength, skill, industry, and implements of the workman. The doctor's political arithmetician, however, probably supposes the ordinary rate of productiveness. In regard to consumption, the disproportion between men is still greater. Compare the costly collection of materials employed for the support of the inmate of a palace and the scanty supplies of the inmate of a hut. The estimate, therefore, must suppose an average rate of consumption, as well as of production. Perhaps, thus understood, it is true. We may go a step further, and safely say, that the products of labour in every civilized community, at the present actual degree of skill and industry, are sufficient to supply a competence to all. What, then, hinders all the world from enjoying competence, happiness, and content, as far as provisions and accommodations for living are concerned? Two great obstacles, viz. the one, that labour is not equally shared by all; the other, that the labour of all is not equally well rewarded. These two causes always have prevented that universal competence which philanthropists desire, and to promote which, in some degree, is the great object of their labours. They aim to enable as many persons as possible to command the means of support upon those terms which the prevailing laws, habits, and customs of society impose. In every society, the means of living of different descriptions are estimated, by general consent, at certain rates; whatever a man can do towards supplying his own, or the general consumption, and whatever is comprehended in the mass of this consumption, is estimated at a certain value or rate. The object of the laws is to protect each one in the possession of his part of the general stock, and to save him from the necessity of parting with it without receiving an equivalent. To enable every one to command a competence, the main requisites are, to enable him to exchange his *labour* for the things which he needs, and to make him willing to labour for the means of support. One great purpose of a large part of the social institutions, including the public schools, and the institutions for moral and religious instruction, is to make him willing and able to earn his living. The laws, moreover, often make provision, and the sentiments of a well-ordered community universally prescribe, that young men should be educated to some employment. In the very elaborate examinations which took place in England, in 1816, under the direction of a committee of the house of commons, on the subject of pauperism and crimes, all the facts disclosed, and opinions expressed, tended to show that the amount of poverty and crime depended almost wholly on the character and habits acquired by the young. No advantages of climate, soil, and situation, will secure a people from the evils of pauperism, and its consequence, crime. Some of the most salubrious and fruitful countries abound in both. Scotland has few paupers compared with Ireland, which is more fruitful and more easily cultivated. The causes of pauperism lie in the character of the population, and the only preventive is the improvement of the people. The pauperism of England is to be attributed, in a great measure, to the reckless and improvident habits of its labouring poor. But the greatest prudence, united with the greatest industry on the part of the poorer classes, will not always save them from want. This is frequently the case in England, where wages are low compared with the expenses of living, so that an ordinary labourer often cannot, in the period of his life when he can do the greatest amount of labour, save any thing against the time of decrepitude or sickness; and the children of suffering parents must suffer with them. The question in regard to such is, By what means shall their present distress be relieved? The economists of the *new school* (as it is sometimes called), namely, that of Mr Malthus, Mr Ricardo, Mr M'Culloch, and others, say that they are to be abandoned to starvation. But a doctrine so abhorrent to our nature is only a hideous theory, which cannot enter into the laws or habits of any people, until human nature shall be sunk into brutal hard-heartedness. The dictates of religion, conscience, and compassion, enjoin upon us to give relief; and the only question practically discussed relate to the mode and degree of the assistance to be afforded, and the measures which ought to be adopted for reclaiming such as bring their misery upon themselves by vice and idleness. The two great objects are—remedy of present suffering and prevention of future; and these two objects are very much blended, for it is a great rule so to administer succour as not to encourage idleness or vice. In the case of young subjects of relief, the greatest charity is that which is directed to the forming of good habits, and giving them instruction in useful arts. With older subjects there is very little hope of any great amelioration of character. But even with these, a regard to the influence upon their habits is constantly to be kept in view in administering to their present wants. One essential condition is, that they should be made to labour, and thus contribute, as far as possible, to their own support. How to employ them to advantage, is a very important inquiry, and no general rule can be prescribed. In some districts, they may be best employed in working on a large farm. Another method is, to let out their services to persons who will contract for their support. This mode should be practised with caution, and with proper provision for the humane treatment of the labourers. As to the sick and infirm, the rest of the community are bound to support them, by a just assessment of the expenses. Charity should be so administered to the poor as not to make it preferable to the gaining a subsistence by individual efforts.

PAUSANIAS; a Greek topographical writer, who flourished during the reigns of Adrian and the Antonines. If he is the rhetorician or grammarian who is mentioned under this name, he was a native of Cæsarea, in Cappadocia, and studied under the celebrated Herodes Atticus. He taught at Athens, and afterwards at Rome, where he died. His account of Greece, a kind of journal of his travels, in which he describes every thing remarkable—temples, theatres, tombs, statues, pictures, monuments of every sort, &c.—is a valuable work for the antiquarian. His style is sometimes careless, and sometimes affectedly formed on more ancient writers; and the work is full of fables which are connected with the objects that he describes. For this reason, Scaliger called him *Græculorum omnium mendacissimus;* but the fullest confidence may be put in Pausanias, where he speaks as an eye-witness. His work has been edited by Kuhn (Leipsic, 1696, folio), Facius (Leipsic, 1794—1797, 4to), Sibelis (Leipsic, 1822, 4 vols.): the latest edition is that of Bekker (Berlin, 1826). The French translation by Clavier and others (Paris, 1814—1821) contains the Greek text and notes, in seven volumes. We have an English translation by Taylor.

PAUSANIAS; a Lacedæmonian general, son of Cleombrotus, and nephew of Leonidas. He was appointed guardian of his cousin Plistarchus, the son of Leonidas, during his minority; and in this capacity, was at the head of the government during the absence of the other king. When Mardonius invaded Greece with a large army of Persians, Pausanias marched against him as general of the allied forces of Greece, deceived his enemy by a feigned retreat, and totally defeated him in the battle of Platæa (B. C. 479). He then advanced to Thebes, which had deserted the cause of Greece, compelled the inhabitants to surrender the leaders of the Persian party, and caused them to be executed. His moderation, which had been admired during the campaign against Mardonius, now gave way to arrogance and overbearing impetuosity. To himself alone he ascribed the victory at Platæa, and offered a golden tripod in the temple of Apollo at Delphi, with an inscription representing himself as the sole conqueror. He became still more insupportable, after having, at the head of the allied Greek fleet, delivered the Grecian cities, and, after a long struggle, Cyprus also, and, finally, Byzantium itself, the key of Asia Minor, from the Persian yoke. While Aristides and Cimon, who commanded under him, won the hearts of all by their affability, Pausanias abused the allies, and considered the Spartans as the ruling nation among the Greeks. At length, he entered into secret negotiations with Xerxes, and conceived the design of making himself master of Greece. He restored to Xerxes, without ransom, many distinguished Persians, who had been taken prisoners at Byzantium, openly renounced the manners and customs of the Spartans, adopting Persian habits and the Persian costume, and carried things so far, that the disgust of the allies could no longer be suppressed. The Spartans summoned him home; but hardly was he acquitted in consideration of his rank and services, when he betook himself again to Byzantium, under the pretence of taking part in the campaign. Being compelled by the Athenians to leave the city, he went to Colonæ, in Troas, and entered into fresh negotiations with the enemies of Greece. He was once more recalled and imprisoned; but, notwithstanding the charges against him, was again liberated, under promise to appear whenever he should be summoned. But he entered into new negotiations with the Persian king. To secure himself against detection, he had obtained from Artabazus a promise to put to death the bearers of his letters. The suspicions of one Argilius, whom he sent on this errand, being awakened, he opened the letter intrusted to him, found his suspicions confirmed, and gave information of the fact to the ephori. In order to procure full proof, they directed Argilius to take refuge in the temple of Neptune, at Tænarus, as if fearing for his life. As soon as Pausanias heard of the circumstance, he hastened to meet him. They entered into a conversation, which disclosed to the ephori, who were concealed in the place, the guilt of Pausanias. The ephori now returned to Sparta, determined to punish him according to the rigour of the law. Pausanias, having been informed, on the way, of the fate which awaited him, took refuge at the feet of Minerva Chalciœcus. But his indignant mother brought the first stone to close the entrance of the temple. The people followed her example, and the unhappy prisoner, being thus walled up, died of hunger. He was buried before the temple, and the anger of the goddess was appeased by the erection of two bronze statues.

PAUSILIPPO; a hill near Naples, with a large and beautiful grotto (*la grotta di Pausilippo*). This is a straight passage cut through the rock, from Naples to Puzzuoli, eighty or ninety feet high, from twenty four to thirty wide, and about 1000 paces long. Through the deep night of this grotto, which is high and wide, but inaccessible to the rays of the sun, passes the daily travel of a very populous district. A powerful echo from the roof increases the rumbling noise of the passage. This cavern, of which so many fables were related in the time of Strabo, was probably hewn out before the time of the Romans, at first only as a quarry, but afterwards continued through the hill. Alfonso I. (1442—1458) enlarged it. It was subsequently made broader and higher, paved, and provided with air-holes. The whole rock is firm, and has never been shaken by earthquakes. In the centre, there is a chapel of the Virgin Mary; over the grotto, are the remains of an aqueduct and of what is called *Virgil's tomb*. Since 1822, the Austrian troops have constructed a road over the Pausilippo to Puzzuoli, by which the passage through the grotto is avoided. In the course of this work, a grotto was found at the summit of the Pausilippo, which is probably the *crypta Pausilypona* of the ancients, the name which is now given to what Seneca called the *crypta Neapolitana*.

PAUW, CORNELIUS DE, canon at Xanten, in Cleves, was born at Amsterdam in 1739, and died in 1799. He was a writer of much learning and ingenuity, but led away by a love of theory and unfounded speculations. His *Recherches philosophiques sur les Grecs, sur les Americains*, and *sur les Egyptiens et les Chinois*, were published together in seven vols., 8vo, at Paris, in 1785.

PAVEMENT OF THE STREETS. If this important invention is not of recent date, its general use is comparatively recent. No large European city, Rome only excepted, had paved streets till towards the twelfth or thirteenth century. More mention is made in the ancient authors of paved highways than streets, which Beckmann, in his History of Inventions, ascribes, however, to the simple circumstance that the latter were probably paved by the citizens, each taking the part before his own his house, so that the government was not required to make provision for this purpose. Isiodore says that the Carthaginians were the first people who had paved streets, which were soon imitated by the Romans; but long before that time Semiramis paved highways, as her own vain-glorious inscription, preserved by Strabo, asserts. At Thebes the streets were under the care of telearchs, who provided for repairing and cleaning them. Epaminondas's being appointed to the office rendered it honourable and sought for, whilst before it had been contemned, and for that very reason given to that great general. Jerusalem seems not to have been paved in the times of Agrippa, according to Josephus. When Rome was first paved is not exactly ascertained, though many antiquarians consider it to have been in the year of the city 578, according to a passage of Livy, which admits, however, of several explanations. The ediles at first had the superintendence of the streets; at a later period particular officers called *curatores viarum*. Pavements of lava, with elevated side walks, are found at Herculaneum and Pompeii. Of modern cities, Paris is generally mentioned as having the oldest pavement; but it is certain that Cordova, in Spain, was paved about 850 A. D. by Abderrahman II., who also brought water to the city in leaden pipes. Paris was not paved in the twelfth century, for Rigord, physician and historian of Philip II., tells us that the king, standing at his window, and disgusted with the dust and dirt thrown up by the vehicles, resolved to pave the street, for which orders were issued in 1184; and this is confirmed by several historians. It is certain that many streets of Paris were not paved even in 1641. All historians allow that London was not paved at the end of the eleventh century. It is not certain when it was first paved; probably the paving took place by degrees. Holborn was first paved in 1417, the great Smithfield market not until 1614.

The first pavement of modern cities was generally, though not always, very bad, as it is even now, in the generality of small places, as the traveller can testify who has been jolted through the small towns of the European continent. That the Romans knew what good pavement was, is proved by the still existing *via triumphalis*, beautifully paved with basalt. Of late, pavements have been much improved; stones have been squared so as better to fit each other, or the streets have been macadamized. In Germany, where coaches often enter the large gateways of the houses, and on stone pavement shake the whole building, paving with square wooden blocks, cut from the knotty parts of a tree, and presenting the ends of the grain uppermost, has been adopted with great success. Lately iron pavement has been proposed in London: oyster shells have been tried as pavement in New Orleans. For more information, see Beckmann's *History of Inventions.*

PAVIA, (anciently *Ticinum*) in the Lombardo-Venetian kingdom, lies in the Tesino, near its confluence with the Po; lat. 45° 10′ N.; lon. 9° 9′ E.; population 21,250. The most remarkable buildings are the palaces Mezzabarba, Bellisomi, and Botta, and the new cathedral. The university is said to have been instituted by Charlemagne. In 1770, it received a new organization, and in 1817 was revived, with its thirteen colleges. It has about 800 students, an observatory, anatomical theatre, &c. The citadel is built in the old style. Pavia was at one time the residence of the kings of Lombardy. In 1525, Francis I. was made prisoner by the emperor Charles V. at the battle of Pavia. The Carthusian monastery (*La Certosa*) here is the finest in Italy.

PAVILION, at Brighton, England; a building erected in 1784 for the then prince of Wales. It was a favourite residence of George IV., and its name sometimes occurs in connexion with important measures agitated there. See *Brighton.*

PAWN-HOUSES. See *Lombards.*

PAYS DE VAUD, WAADTLAND, or WAADT; one of the cantons of the Swiss confederacy which has the lake of Geneva on the S., France on the W., Neufchâtel on the N., and Friburg and Berne on the E.; square miles, 1181; population (1827), 178,880, of which 6000 were Germans and the rest French; Calvinists, 175,850. The capital is Lausanne. This canton is not only one of the largest and most populous of the confederacy, but according to Simond, is the one in which the advantages of education are most generally enjoyed. Crimes are of very rare occurrence. The legislative body consists of 180 members, nine of whom constitute the executive. Justice is administered by justices of the peace, district courts, and the supreme court at Lausanne. The soil is fertile and well cultivated; the most important productions are orchard fruits and the wine grape; the Ryff wine and the *vin de la Côte* are celebrated.—The Vaud formerly belonged to the dukes of Savoy, from whom it was conquered by Berne. In 1803, it was acknowledged as an independent canton. In December, 1830, the popular voice demanded a revision of the constitution; a committee was accordingly formed for this purpose, but its dispositions did not meet the public views, and a general rising took place. Eight thousand petitioners, without arms, assembled at Lausanne, but, on receiving assurances of reform, dispersed without committing violence. See *Switzerland.*

PAZZI, one of the richest and most distinguished families in the Florentine republic, is celebrated for its connexion with the conspiracy of 1478, of which it became the victim. Jealousy of the power of the Medici combined with the jealousy of a disappointed lover to inflame Francis Pazzi, the author of the conspiracy, against Julian of Medici, his rival, who had privately married Camilla Cafarelli. Francis Pazzi, rash, haughty and vindictive, resolved to avenge this offence, and the humiliations of his family, by the destruction of the Medici. Bernard Bandini, who also hated the Medici, was his first confidant. Aware that the increasing power of the Medici was viewed with dislike by the pope, Sixtus IV., they acquainted his son, Jerome Riario, the friend of Pazzi, of their design of assassinating Lorenzo and his brother Julian of Medici, and introducing a new form of government, and wished through him to gain the assistance of the pope. The latter promised his aid, and Francis Salviati, archbishop of Pisa, the enemy of the Florentines and of Lorenzo de' Medici, also joined them. James Pazzi, uncle of Francis, and a peaceful and prudent citizen, was persuaded by Montesecco, the general of the pope, to take part in the conspiracy. While Charles Manfredi, count of Faenza, was sick, the conspirators, without exciting the suspicion of the Medici, collected a number of troops for their defence. They resolved to murder both the Medici at a festival. Their project was twice frustrated by the absence of Julian; and the 26th of April, 1478, the day in which religious service was to be celebrated in the church of Santa Reparata, was next fixed upon for the execution of their designs. The sound of the bell, at the moment the priest raised the host, was to be the signal; but as the time approached, Montesecco refused to pollute the sacred place. The work was now committed to Anthony of Volterra and Stephen, a priest, two weak men. Lorenzo and a large number of people were already assembled in the church, but Julian was not present. Francis Pazzi and Bandini went and persuaded him to attend the mass. On the way to the church they conversed with him in the most friendly manner, and Francis Pazzi several times embraced him, in order to ascertain that he was not clothed in armour. When they arrived at the church, they placed him between themselves, and Anthony of Volterra and Stephen stationed themselves by the side of Lorenzo. At the second sound of the bell, Francis Pazzi stabbed Julian with such violence as to wound himself. Bandini murdered Nori, the friend of Julian. Anthony and Stephen attacked Lorenzo, but only gave him a slight wound in the neck. He escaped into the sacristy. Francis and Bandini, who undertook to pursue him, were prevented. Many persons lost their lives in the crowd, and it was with difficulty that the cardinal was defended by the priests from the popular fury. Bandini fled. Francis, after an unsuccessful attempt to rouse the people to insurrection, faint from loss of blood, was forced to return home. Salviati and James Poggio at the head of about 100 Perugians, had proceeded to the palace to take possession of it; but Cæsar Petrucci, the gonfalonier, suspecting their designs, summoned the guards, and occupied the upper story. The Perugians were accidentally shut up in a hall which could not be opened from within, and the Florentines easily seized the archbishop and many of the conspirators. Some of them were killed on the spot; others were hanged from the windows, and afterwards thrown into the streets. The enraged populace seized Francis Pazzi in his house, dragged him naked through the streets, and hanged him, with seventy others, at the windows of the palace. James Pazzi, who was riding through the streets calling the people to arms and liberty, was stoned from the palace of the *signoria*, and, finding no adherents, fled to the Apennines, where he was recognized by a peasant, carried back to Florence, and hanged with Renatus Pazzi. The people took his body from the family tomb, and threw it into the fields. The corpse was again buried, and again disinterred by the people, and thrown into the Arno. Bandini had fled to Constantinople; but he was surrendered by the sultan, Bajazet, and executed with Anthony of Volterra, and Stephen, who had fled to a monastery. Napoleon Francesi and William Pazzi, who was innocent, and was brother-in-law of Lorenzo, both escaped the rage of the populace. But notwithstanding the entreaties of his wife, Bianca, the latter was banished to his villa for life. The former disappeared, and was never more heard of. The rest of the family were imprisoned for life in the dungeons of Volterra. Montesecco was beheaded; and the cardinal was sent back by Lorenzo, with many apologies to Rome.

PE; a Chinese word, indicating *north;* for instance, *Pe-King* (northern residence).

PEA (*pisum sativum*). The native country of the pea is unknown, but it is commonly referred to the south of Europe. It has been cultivated from remote antiquity, and is now universally diffused, and forms one of the most valuable of culinary plants. It belongs to the natural family *leguminosæ*. The root is annual; the stem herbaceous, divided often from the base into several cylindrical weak branches, trailing upon the ground, unless support is afforded; the leaves are pinnate, provided at base with large stipules, and terminated with tendrils; the flowers are axillary, usually disposed in clusters upon a common peduncle, and of a whitish, or, sometimes, reddish or purple colour; they are succeeded by oblong and almost cylindrical pods. The varieties which have been produced by cultivation are very numerous, and differ in the colour of their flowers, their number, and that of the seeds, the time of ripening, and in stature, some being low plants of a few inches, and others attaining the height of ten or twelve feet. Some varieties have pods destitute of the coriaceous inner film, which admits of their being boiled entire, and served up in the same manner as kidney-beans. Peas are nutritious, and, especially when green, form an agreeable article of food to most persons. When ripe they are used for soup, and are prepared by freeing them from the husks, and splitting them in mills constructed for the purpose. They are sometimes ground into flour, which is mixed with that from wheat by bakers, but the bread is rendered heavy and unwholesome. With rye-flour, however, in the proportion of one fourth, they are said to afford a palatable and nourishing bread. Green peas are among the earliest products of the garden, and a succession may be kept up throughout the season by sowing at different periods of time. A second species, the *pisum maritimum*, grows wild on the sea-shore. It resembles in form the preceding, and has large reddish or purple flowers, disposed in racemes. The seeds are bitter and disagreeable, though it is said they have been collected for food in times of scarcity.

PEACE, Justice of the. See *Justice of the Peace*.

PEACE, Perpetual. St Pierre was the first who proposed a formal plan for perpetual peace, which Rousseau afterwards made known. The almost verbal coincidence of St Pierre's articles for his international league with the articles of the act of the Germanic confederation is very remarkable. (See *Henry IV.*) This subject has subsequently been brought forward by Kant, among others, in his treatise *Zum ewigen Frieden* (For Perpetual Peace). The general means proposed for producing perpetual peace were sometimes the balance of power, sometimes a universal monarchy, and sometimes a general international union, or league of states, adjusting all their disputes by amicable arbitration by means of a permanent congress, as the highest tribunal of the nations. But all these means are necessarily imperfect. The idea of promoting the cause of permanent peace by societies expressly organized for that purpose, was agitated in this country before the late war with England; but it was not till after the close of the war that the first peace society in the world was formed in New York, in August, 1815. In the subsequent year, a peace society was formed in London. In France, a society with similar views was formed in 1821, under the sanction of government, enumerating among its members men of high rank and character. The object of these societies is to effect the abolition of war by the diffusion of intelligence and knowledge; but their efforts, as yet, have been confined to the distribution of a few tracts.

PEACE, Religious (German, *Religions-friede*). There are two treaties of peace in German history bearing this name, both in the time of the reformation; one concluded July 22, 1532, and called the *religious peace of Nuremberg*; the other concluded September 26, 1555, and called the *religious peace of Augsburg*. By the first, the emperor Charles V. promised to convoke a great council to settle all religious differences, until which all hostilities should be suspended; and, if a council should not be convoked, a new compromise was to be made between the Protestants and Catholics. But, respecting the claims of the Protestants, particularly as to the free and public exercise of their religion, the imperial commissioners were unwilling to promise any thing definite. The Protestants placed themselves, by this peace, in a disadvantageous position. The second peace produced something like a settlement between the two religious parties, after a long period of war and suffering. Ferdinand declared, in the name of his brother the emperor, at Augsburg, that little good could be expected from a national council, and that it was much better to think of establishing peace in the empire without attempting to reconcile jarring religious opinions. Peace was finally concluded on the terms that no member of the empire should be attacked on account of his religion, but should be left in quiet possession of his land, subjects, property, mode of worship, &c.; religious disputes should be settled only by amicable means; people should be allowed to change their residence on account of religion, &c. Two points only furnished subjects of an obstinate dispute for six months. The Protestants demanded that the ecclesiastical members of the empire, the bishops, abbots, &c., should be at liberty to become Protestants, which the Catholics would agree to only on condition that every clergyman becoming a Protestant should, *ipso jure et facto*, lose his office and authority; but the Protestants demanded that the converted bishops should continue in authority over wealthy countries. The two parties could not agree, and the emperor at last decided, as was customary. This point is called the *reservatum ecclesiasticum*. The emperor decided that every bishop, prelate, &c., becoming Protestant, should lose his office and income, but without injury to his honour and dignity. The second point was, whether Protestants under Catholic governments should be allowed to enjoy the free exercise of their religion. Ferdinand decided that they should until a final religious compromise; and thus peace was concluded without the necessary basis, free exercise of religion. An opening was thus left for many bloody wars.

PEACE RIVER. See *Mackenzie's River*.

PEACH. This is, perhaps, the most exquisite of the fruits of temperate climates, and, if not eaten to excess, one of the most wholesome. The tree is of middling stature, but varies, in this respect, according to soil and climate. It belongs to the natural family *rosaceæ*. The leaves are alternate, simple, lanceolate, acute, and finely serrated. The flowers appear before the leaves, are very beautiful, and diffuse an agreeable odour. The fruit is a large downy drupe, containing a stone which is deeply furrowed and rough externally, which character distinguishes it from both the almond and apricot. The peach tree is known to botanists under the name of *amygdalus Persica*, or, more recently, *Persica vulgaris*, and is supposed to have been introduced into Europe from Persia. It was first introduced into England about the year 1562. The varieties are very numerous, differing in size, flavour, and time of ripening; but they are principally of two sorts—the *free-stones*, in which the flesh may be easily separated from the stone, and the *cling-stones*, in which it is adherent. The nectarine is by some considered a mere variety of the peach, differing only in its smooth skin; and this fruit is likewise divided into cling and free-stones. The peach is reproduced by planting the stones; but it is usual, when the stocks have attained a certain size, to graft upon them any required variety. Forty years are mentioned as the duration of the peach-tree. It is recommended, when the fruit approaches maturity, to strip off the surrounding leaves, in order that it may be fully exposed to the rays of the sun.

PEACOCK (*pavo*, Lin., &c.); bill naked at the base, convex above, thickened, bent down towards the tip; nostrils open; cheeks partially denuded; feathers of the rump elongated, broad, capable of being expanded like a fan, and ocellated; tail wedge-shaped, consisting of eighteen feathers; feet furnished with four toes; the tarsi with a conical spur; the head crested.

P. cristatus, Lin., &c.; *crested*, or *common peacock*. To recite the numerous details of the markings of this splendid bird would require a long description, which, after all, would convey but a faint idea of the original. There are, however, few of our readers who are not sufficiently familiar with the rich attire of the living specimen to dispense with a minute enumeration of its changeable hues. Like other domesticated birds, it exhibits several varieties. The ordinary length of the peacock, from the tip of the bill to that of the full-grown tail, is about four feet. The female is rather less; and her train is not only very short, but destitute of those beauties which ornament the male; her crest, too, is shorter, and her whole plumage partakes of a cinereous hue; her throat and neck are green, and the spots on the side of the head are larger than those of the male. The females of this species, however, like those of some other birds, have sometimes been known, when past breeding, to assume the male attire. In a state of nature, the pea-hen breeds once a year, and lays, it is alleged, from twenty-five to thirty eggs, of a whitish hue, speckled with dusky. In colder climates, and when domesticated, the number of eggs seldom exceeds five or six, and the hen sits from twenty-five to thirty days, according to the temperature of the country and season. When pleased or delighted, the cock erects his tail, unfolds his feathers, and frequently turns slowly round, as if to catch the sunbeams in every direction, accompanying this movement with a hollow murmuring. At other times, his cry is very disagreeable, and often repeated, especially before rain. Every year he sheds his plumes; and courts the most obscure retreats till the returning spring renews his lustre. The young acquire the perfect brilliancy of their plumage in their third year; but, in cold climates, they require attention in rearing, and should be fed on grass, meal, cheese, crumbs of bread, and insects, until they are six or seven months old, when they will eat wheat and various sorts of grain, like other gallinaceous birds; but the peacock is, in this respect, extremely capricious, and there is hardly any kind of food which it will not, at times, covet and pursue. According to Aristotle, it lives about twenty-five years; but Willoughby and others allege that it is capable of existing for near a century. When full grown, it is not readily injured by cold. Though long naturalized in Europe, it is of Eastern origin, occurring in the greatest profusion in the neighbourhood of the Ganges, and in the extensive plains of India, particularly in Guzerat, Cambay, the coast of Malabar, the kingdom of Siam, and the island of Java. As early as the days of Solomon, they were imported into Judea by the fleets which that monarch equipped on the Red sea. From India they were brought into Asia Minor, and subsequently into the isle of Samos, where they were formerly much multiplied, and consecrated to Juno, but from which they have now wholly disappeared. In Greece, they still brought a high price in the time of Pericles. They were introduced into Rome towards the decline of the republic; and the orator Hortensius was, according to Pliny, the first who had them presented at table, at a feast which he gave to the college of augurs. The emperors took a pride in collecting large dishes of the heads or brains of peacocks, which seem to have had nothing to recommend them but the enormous expense at which they were provided. In modern times, the young birds only are reckoned fit for the table. The Europeans have introduced them into Africa and America.

P. chinquis, Tem.; *pavo bicalcaratus*, and *pavo Thibetanus*, Lin.; *peacock pheasant*, *iris peacock*, *Thibet peacock*. These singular birds, which are rather larger than a pheasant, and highly elegant and beautiful, inhabit China and the mountains which separate Hindostan from Thibet. According to Sonnerat, they likewise occur in Malacca. The most remarkable circumstance in their natural history is that of the tarsi being armed with several spurs, which vary in number from two to six, and frequently the same bird has a different number on each leg. Another curious fact is that the tail is composed of two distinct ranges of long feathers, the undermost being the true tail. These feathers are capable of being erected, and displayed like a fan when the bird is agitated, but at other times they remain in a horizontal position. The plumage of the female is less brilliant than that of the male, and the tail shorter. In the natural state, this species is not very wild, and it readily becomes accustomed to confinement, and propagates with facility.

PEAK; a name given to the upper corner of those sails which are extended by a gaff, or by a yard which crosses the mast obliquely, as the mizzen-yard of a ship, the main-yard of a bylander, &c. The upper extremity of these yards and gaffs is also denominated the *peak*.

PEAK CAVERN, in Derbyshire. See *Cave*.

PEALE, CHARLES WILLSON, the founder of the Philadelphia museum, was born of English parents, at Chestertown, Maryland, in 1741; was apprenticed to a saddler at Annapolis, and married at an early age. He successively carried on the trades of saddler, harness-maker, silversmith, watchmaker, and carver; and afterwards, as a recreation from his sedentary practice of portrait-painting, became a sportsman, naturalist, and preserver of animals; made himself a violin and guitar; invented and executed a variety of machines; and was the first dentist in America that made sets of enamel teeth. At the age of twenty-six, he was first excited to become a painter by the desire of surpassing the wretched things which he happened to meet with. At this time, Hesselius, a portrait-painter from the school of Sir Godfrey Kneller, was living near Annapolis. Mr Peale, selecting the handsomest saddle his shop afforded, as a present to the artist, introduced himself, and solicited the favour of seeing, for the first time, the mysterious operations of painting. Mr Hesselius gave him essential instruction, and he afterwards received similar services from Mr Copley, on a visit to Boston. Soon after, by the aid of his friends, he went to England, and studied, during the years 1770 and 1771, in the royal academy at London, under the direction of Mr West. The writer of this article was informed by colonel Trumbull, that, one day when he was in Mr West's painting room, some hammering arrested his attention. "Oh," said Mr West, "that is only that ingenious young man, Mr Peale, repairing some of my bells or locks, according to custom." This custom, much to the comfort and amusement of many a host, he continued all through life, whenever he was on a visit in the country, either for business or pleasure. On his return to America, he removed to Baltimore, and afterwards to Philadelphia, where he opened a picture-gallery. For about fifteen years, he was the only portrait-painter in North America; and persons came to him to be painted even from Canada and the West Indies. During the revolutionary war, he raised a company, was often employed in confidential services, and was engaged in the battles of Trenton and Germantown. In 1777, he was elected a representative of Philadelphia in the state legislature, where he chiefly interested himself in the law for the abolition of slavery. During the revolutionary contest, he had painted the portraits of many distinguished officers, some of whom were afterwards killed. This collection constituted the chief interest of his gallery, and was, from time to time, extended, and afterwards made to comprise the portraits of men eminent in the different walks of life. Some large bones of the mammoth, found in Kentucky, and brought to him to be drawn, laid the foundation of his museum, when the name of *museum* was scarcely known even to our travellers, and Europe possessed none of great note but the celebrated Aldobrandine collection at Florence. The increasing income from his museum at length enabled Mr Peale to procure almost an entire skeleton of the mammoth, at an expense of 5000 dollars. A large quantity of the bones of an individual of this species was discovered in Ulster county, New York, which Mr Peale purchased, together with the right of digging for the remainder in a swampy marl pit, which was obtained after very great exertions. When the Pennsylvania academy of the fine arts was founded, he zealously co-operated for many years, and lived to contribute to seventeen annual exhibitions. After a life of extraordinary exertion and temperance, he died, in 1827, at the age of eighty-five.

PEAR; the fruit of the *pyrus domestica*, a tree growing wild in many parts of Europe, and now cultivated in all temperate climates. The pear tree belongs to the *rosaceæ*, and, by some authors, is placed in a different genus from the apple, from having flexible sides to the cells which contain the seeds, and from the turbinated form of the fruit. It is the largest of the genus, and reaches the height of forty feet, with the trunk two feet or more in diameter. The leaves are simple, alternate, oval, and finely serrated. The flowers are white, about an inch in diameter, and are disposed in terminal or lateral corymbs. The fruit, in a wild state, is regularly turbinated, about an inch either way, and to the taste is austere until perfectly ripe, when it becomes soft, juicy, and not disagreeable. In the cultivated plant, the fruit varies exceedingly in size, colour, taste, and time of ripening. The culture of the pear is very ancient, and several varieties were known to the Greeks and Romans. At the present day, more than two hundred, fit for the table, are enumerated, and constant accessions are made every year; for the seeds never reproduce the same variety without more or less modification. These varieties are perpetuated only by grafting; they differ in colour, being either greenish, yellowish, grayish, or reddish; in the consistence of the pulp, dry and firm, or melting and watery; and in taste, insipid, austere, acid, or sugary. A constant succession may be had from the beginning of summer, throughout the winter. Pears are chiefly used in deserts, and are generally considered much superior to apples; some varieties are stewed with sugar, baked, or preserved in sirup. France and the north of Italy are celebrated for the perfection to which they have carried the culture of this fruit. Even in districts where it grows wild, the tree is very liable to injury from frosts, which greatly diminish its bearing. There are, besides, numerous varieties of pears, cultivated solely for the purpose of making perry, a liquor analogous to cider, and prepared nearly in the same manner. This is less wholesome, and in general is less esteemed, than cider, though often very agreeable; indeed, many of the dealers in Champaigne wine are said to use perry to a great extent in the adulteration of it; and really good perry is little inferior to it in taste or quality. The wood is fine-grained, of a yellowish colour, and susceptible of a brilliant polish: it is not subject to the attacks of insects, and receives a black dye remarkably well, when it so much resembles ebony, that it can only be detected by the difference in specific gravity. In the early ages of Greece, this wood was employed in statuary; now it is used for musical instruments, the handles of carpenter's tools, and a great variety of mechanical purposes; it is, besides, excellent fuel. Nine other species of *pyrus*, as the genus is above restricted, are known; all natives of the temperate parts of the eastern continent.

PEARL. Pearls are produced by a testaceous fish of the oyster kind, which lives in the waters of the East and West Indies, and in other seas in warm latitudes. They are found in some parts of the globe in clusters of a great number, on rocks in the depths of the sea. Such places are called *pearl-banks*, of which the most famous are near the coast of Ceylon, and that of Japan, and in the Persian gulf, near the island of Bahreim or Bahrem. Near the coasts of Java, Sumatra, &c., the pearl is also found. The finest and most costly pearls are the Oriental. Some consider pearls to be unfructified eggs, others a morbid concretion or calculus, produced by the endeavour of the animal in the shell to fill up holes in the shell: others consider pearls as mere concretions of the juice of which the shell has been formed, and with which the animal annually augments it. To collect these shells is the business of divers, brought up to this most dangerous occupation from early youth. They descend from their boat with a rope fastened round their body, and a stone of twenty or thirty pounds weight attached to the foot to sink them. Generally they have to descend from eight to twelve fathoms, before they reach the shells. Their nostrils and ears are stopped up with cotton; to the arm a sponge, dipped in oil, is fastened, which the diver now and then brings to his mouth, in order to draw breath without swallowing water. Every diver has, besides, a knife, to loosen the shells, and a little net or basket, to collect them. When he has filled this, or is unable to stay any longer under water, he unlooses the stone quickly, shakes the line, and is drawn up by his companions. These divers are often destroyed by sharks; their health always suffers by this occupation. Other divers use the diving bell. The shells thus obtained are put into vessels, where they remain till the body of the animal putrefies, when they mostly open of themselves. Those which contain any pearls, have generally from eight to twelve. After being dried, they are passed through nine sieves of different sizes. The worth of a pearl is in proportion to its magnitude, round form, fine polish, and clear lustre. The largest are of the size of a small walnut; but these are very rare. Those of the size of a cherry are found more frequently, yet still very rarely. Pearls are round, pear-formed, onion-formed, and irregularly shaped. The small ones, sold by weight, are called *ounce pearls*, the smallest, *seed pearls:* these are converted into powder. In Europe, pearls of "white water" are the most sought for; the Indians and Arabians prefer those of "yellow water." Some have a lead colour, some incline to black, some are totally black.

Pearls are found in the Elster, a river in the Voigtland, in the kingdom of Saxony, from its origin down to the small town Elsterberg, as well as in the rivulets which fall into the Elster, Since 1621, a pearl fishery has been established there, of course for the benefit of the sovereign. Also in the river Watawa, in Bohemia, and in the Moldau river, from Krumau to Frauenberg, pearls are found, sometimes of great beauty, and difficult to be distinguished from the Oriental pearl. The fishery there is the property of the owner of the land. There are also pearl fisheries on the coasts of Scotland. Even in antiquity pearls were an object of luxury. A pearl which Pliny valued at about £84,000 of our present money, Cleopatra is said to have dissolved at a banquet, and drank off to Antony's health. Another, called *la peregrina*, was given to Philip II. of Spain. It was oval, and of the size of a pigeon's egg, and was valued at 80,000 ducats. Pearls were formerly used in medicine; but their medical operation is not different from that of any other calcareous earth. Linnæus discovered how to produce artificial pearls from the common river muscle; but the process has never been published, nor has it ever come into use. The shells of the pearl oyster are the substance called *mother of pearl*. See *Nacre*.

There is a very curious passage in Philostratus (*Vita Apollon.*), in which Apollonius the philosopher relates that the inhabitants of the shores of the Red sea, after having calmed the sea by means of oil, dived after the shellfish, enticed them, by means of some bait, to open their shells, and having pricked the animals with a sharp-pointed instrument, received the liquor that flowed from them in small holes made in an iron vessel, in which it hardened into real pearls. The Chinese at present cause a certain kind of muscles to form pearls. In the beginning of summer, when the muscles repair to the surface of the water, and open the shells, five or six small beads made of mother of pearl, and strung on a thread, are thrown into each of them. At the end of the year, when the muscles are drawn up and opened, the beads are found covered with a pearly crust, in such a manner that they have a perfect resemblance to real pearls. The truth of this, says Beckmann, in his History of Inventions, cannot be doubted. (See vol. ii. of the English translation of Beckmann.) In the same work curious facts respecting the discovery of Linnæus, and other points connected with this subject, are found under the head *Artificial Pearls*.

PEARL ASH. The common name for carbonate of potash. See *Potassium*.

PEARL, MOTHER OF. See *Nacre*.

PEARL POWDER. See *Bismuth*.

PEARL STONE. See *Pitchstone*.

PEASANTS' WAR. A war of the German peasantry in Suabia and Franconia, afterwards also in Saxony and Thuringia, against the oppressive taxes and services under which they languished. As early as the end of the 15th and the beginning of the 16th centuries, opposition was made to the bond-services in some places, and to the insupportable exactions of the nobility in others. The reformation in religion, which now excited universal attention, gave men the example of examining established usages, and a new desire for a better condition arose among the oppressed peasantry. The clergy and the nobility were deaf to their call; but the successful struggle for liberty in Switzerland gave them hope. The peasants of Alsace revolted, and, in 1513 and 1514, those of Wurtemberg. John Bohme, a young man of the territory of Wurzburg, declared that the Virgin had announced to him, that liberty and equality were now to be introduced among men; the earth was to be equally free for the use of all. 40,000 men are said to have collected around him, from Franconia, Suabia, Bavaria, and the Rhine. He directed his followers to appear armed on a certain evening, without their wives and children. He was, however, arrested by the bishop of Wurzburg. But 46,000 men marched to his rescue against the castle of Wurzburg. They were routed, and Bohme, with several others, executed. In 1525, the peasants rose again, and sent twelve articles to Wurzburg, in which they maintained the justice of their complaints. They principally wished, 1. to elect their own curates; 2. that the tithes should be appropriated solely to the maintenance of their curates; 3. that feudal services should be abolished; 4. that hunting and fishing should no longer be the exclusive privilege of princes and nobles; 5. that the feudal services should be more accurately determined, and the lord should not arbitrarily demand service from his vassal, &c.—The bishop promised to fulfil these demands; but the peasantry, who suspected his intentions, took up arms, and even the citizens, whom he called to his assistance, took their part. After Easter, in 1525, the peasantry in arms marched against Wurzburg; the bishop fled to Heidelberg. They took Wurzburg, and proceeded to burn and ravage the country around, but were beaten near Konigshofen and Sulzdorf; 9000 peasants were killed, or taken prisoners, and afterwards put to death. Wurzburg was compelled to surrender to the conquerors, and the bishop returned there June 8, 1825. This war was not suppressed in Franconia and Suabia till after it had cost the lives of more than 50,000 peasants, without their attaining their aim—the diminution of their burdens—which, on the contrary, were in some places increased. The troubles in Franconia and Suabia, were succeeded by the peasants' war in Saxony and Thuringia, which was principally excited by Thomas Munzer. (q. v.) See also the *History of the Peasants' War*, by Sartorius.

PEAT. See *Fuel*.

PECULATION; the term, in the Roman law, for the embezzlement of public money belonging either to the government or to communities. Under *peculation*, also, was comprised the adulteration of gold, silver, or any metal belonging to government. Connected with it, by a law of the dictator, Cæsar, were the *crimen de residuis* (if a person had received public money for a certain purpose, and did not apply it for the same), and the *sacrilegium* (the theft or misappropriation of money or other things sacred to a god). In most governments, the embezzlement of public money by public officers is severely punished. Peculation and treason were, by the French charter of 1814, the only crimes for which a minister was impeachable. For further information, see the article *Embezzlement*.

PECULIUM. The Roman slave, with every thing belonging to him, was, at first, the property of his master; but at a later period, a slave was permitted to have a property in a portion of the proceeds of his labour, as an incentive to diligence. This was styled his *peculium;* and masters were in the habit of making agreements with their slaves, who exercised some

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